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SMITHSONIAN INSTITUTION
BUREAU OF AMERICAN ETHNOLOGY
BULLETIN 34

PHYSIOLOGICAL AND MEDICAL OBSERVATIONS

AMONG THE INDIANS OF SOUTHWESTERN UNITED STATES AND NORTHERN MEXICO

BY

ALEŠ HRDLIČKA

WASHINGTON
GOVERNMENT PRINTING OFFICE
1908

E51 .U6 no. 34

LETTER OF TRANSMITTAL

SMITHSONIAN INSTITUTION,
BUREAU OF AMERICAN ETHNOLOGY,
Washington, D. C., May 23, 1905.

SIR: I have the honor to submit herewith the manuscript of Bulletin 34 of the Bureau of American Ethnology, entitled "Physiological and Medical Observations among the Indians of Southwestern United States and Northern Mexico," by Aleš Hrdlička, Assistant Curator in charge of the Division of Physical Anthropology, United States National Museum. This bulletin comprises the results of extended researches and personal observations among a large number of tribes occupying the arid region of the Southwest and deals with matters of great importance to the aborigines and to those agencies, governmental and otherwise, interested in promoting their welfare, as well as to the science of Anthropology at large.

Respectfully,

W. H. HOLMES, *Chief.*

The SECRETARY OF THE SMITHSONIAN INSTITUTION,
Washington, D. C.

85155

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PHYSIOLOGICAL AND MEDICAL OBSERVATIONS

AMONG THE INDIANS OF SOUTHWESTERN UNITED STATES AND NORTHERN MEXICO

By Aleš Hrdlička

I. INTRODUCTION

From 1898 to 1905, in the course of six expeditions,[a] the writer visited nearly all the Indian tribes in southwestern United States (exclusive of California) and in northwestern Mexico. These expeditions were made primarily in the interest of physical anthropology, but, as a physician, the writer had exceptional opportunities for acquiring information of a physiological and medical nature. The results of his observations, accompanied by data the accuracy of which seems clearly established, and including various relevant tests and measurements, are herein presented.

The tribes visited comprised the following:

In southern Colorado: Southern Ute (with a band of Paiute in southeastern Utah); in New Mexico: Jicarilla Apache, Navaho (also in Arizona and southern Utah), the Rio Grande Pueblos of Taos, San Juan, Jemez, Santo Domingo, Sia, and Isleta, and the western Pueblos of Laguna, Acoma, Acomita, and Zuñi; also the Mescalero Apache; in Arizona: Hopi Pueblos, White Mountain and San Carlos Apache, Mohave (eastern, or Yavapai, and western), Havasupai, Walapai, Papago, Pima, Maricopa, Yuma (mostly in California); in Sonora: Opata, Yaqui, and Mayo; in Chihuahua: Tarahumare; in Durango: Tepehuane; in Tepic: Cora; in Jalisco: Huichol, Tepecano, remnants of the Teul "Mekkos," and Nahua (Tuxpan); in Hidalgo: Otomi; in Mexico: Mazahua, Otomi; in Michoacan: Tarasco; and in Morelos: Aztec (Tlahuiltec).

Opportunities for observation varied with the tribes. Among some, intelligent aid and sympathetic cooperation were experienced, while among others these great helps were partly or wholly lacking; hence the notes for different localities are not of equal interest or extent. The data concerning medical practices, which among the Indians are largely thaumaturgic in character and of minor importance from the medical point of view, are especially incomplete. To acquire a thorough understanding of some of the features of Indian life herein touched on would require unusual opportunities and years of patient labor in a limited field.

---

[a] The five earlier expeditions were conducted under the general direction of Prof. F. W. Putnam, for the American Museum of Natural History, New York; the sixth was made under the auspices of the Bureau of American Ethnology. The expenses of the second, third, fourth, and fifth expeditions were generously borne by Messrs. Frederic E. Hyde, jr., and B. Talbot B. Hyde, of New York City; and the writer takes this occasion to express again his indebtedness to these gentlemen, and his appreciation of the liberal spirit with which they have furthered the interests of American anthropology.

One of the main results of the present studies is the accumulation of evidence that in many points of physiological nature, as well as in those relating to medicine, there is much similarity among all the tribes visited. This likeness extends, so far as can be judged from data and observations on other tribes, far beyond the region already outlined. Another point of even greater importance is the growing evidence of similarity, though never reaching full identity, of the vital processes in Indians and whites.

In elaborating these data the writer has arranged the text by subjects rather than by tribes. The report is prefaced with brief notes of a more general nature on conditions which determine the welfare of the native population, as an outline of these conditions is necessary to a full appreciation of the physiological and medical studies presented.

II. GENERAL ENVIRONMENT

The region inhabited by the tribes to which these studies relate lies between latitude 38° and 18°, west of the Rio Grande and the Mexican Central railway and east of the Rio Colorado and the Gulf of California. Much of this vast area, particularly in the north, is arid, but, on the whole, the aridity decreases from north to south. It is characterized by numerous isolated mountain groups or ridges, in which erosion has carved rugged canyons, some of great depth, between which extend large level plateaus, or llanos.[a] The slopes are usually steep, so that most of the rainfall is speedily drained off through the canyons and narrow valleys. The plateaus, mostly sandy, are covered more or less with grass and other sparse vegetation, but are unfit for cultivation in the absence of artificial irrigation; but the river bottoms everywhere afford rich arable lands. The mountain summits and the numerous high table-lands are in some instances almost barren, but more often they are covered with stunted oak or cedar. On some of the great mesas, however, particularly in Mexico, beautiful forests of oak and pine extend for many miles.

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[a] A thorough geographic, geologic, and climatologic summary of this whole area is wanting. Contributions to this subject, however, will be found in Hayden's, Wheeler's, Emory's, and Powell's, contributions, and in the Pacific Railway Surveys. See N. H. Darton's Catalogue and Index of Contributions to North American Geology, 1732-1891, *Bulletin 127, United States Geological Survey*, Washington, 1896.

The general surface geology of the tract appears to be quite simple. In the northern part the formations are largely Jura-triassic, with some volcanic features, while farther south the exposed rocks are either of volcanic origin or are limestones or granites. The highest plateaus are evidently remains of old extensive plains, the valleys, canyons, and other depressions being products of erosion. At present volcanic activity exists only in the extreme south of the area dealt with in these studies, in Mexico, but hot springs are found throughout the region. Earthquakes, while occurring occasionally, are rarely destructive, except in the vicinity of the volcano of Colima, in Mexico.

The elevation of the areas inhabited by the Indians some or all of the time varies from a little above the sea level along the Pacific coast to about 8,000 feet in the interior. The large plateaus range in altitude from 3,000 to 5,000 feet, the highest mesas reach about 10,000 feet above the sea, and a few of the peaks rise above this elevation. The plains are settled only where there is a constant water supply, and the highest mesas are inhabited, if at all, only at intervals. The climate of this territory, with a few exceptions, is characterized by marked uniformity. From southern Utah and Colorado to the City of Mexico, except in the more southern coast area, the period corresponding to the fall, winter, and spring of the middle Atlantic seaboard constitutes the dry season. During this season vegetation is dormant and animal life scarce. The air is very dry and clear, and excessive evaporation takes place. The valleys and the lowlands in general are hot in the daytime, the temperature in the shade often exceeding 95° and 100° F., but the nights are invariably cool. In the more elevated portions of the vast area under consideration the temperature during the day in the dry season is always bearable and often very pleasant, while the nights are cold. During the winter months the temperature falls below the freezing point. From January to March the dry spell is somewhat interrupted and snow and rain fall at irregular intervals. Only rarely is the rainfall at this time heavy. Along the Pacific slope of Mexico, in southern Sinaloa and Tepic, precipitation is more frequent and there is a source of additional moisture in the dews. In October, for example, at the beginning of dry weather in the latter region, the writer's party was greatly inconvenienced by unhealthful morning dews that were quite equal to moderate showers.

During the dry season there occur frequently on the sandy plateaus, particularly those of New Mexico and Arizona, more or less violent and protracted "sandstorms." These result, directly or indirectly, in much physical suffering to the Indian, though only exceptionally are they dangerous to life. They interfere also with agriculture.

In May in the south and extending to July in the north the main season of rain begins. The dry stream beds become, in many localities, seething, muddy torrents; water collects in every depression; vegetation springs up with remarkable celerity; animal life in many forms rapidly increases, and the whole life of the people changes. The rainy season has various phases, according to which the activities of the natives are regulated. In some localities heavy thunder showers are of almost daily occurrence, with intermissions of clear weather. The mornings are generally clear and bright, but as the day advances heat and moisture increase, and about midday thunder and rain begin. At times the downpour continues from two to four days and nights, with scarcely an intermission. Night rain is not rare. Notwithstanding this the nights are often cool and comfortable, particularly in the highlands, but elsewhere they are generally hot. In the lowlands near the coast the moisture-laden atmosphere becomes very oppressive and debilitating, and good sleep is often impossible. The rainy season lasts, with more or less regularity, until the end of September. In the more arid parts of the region, in the north, the rains are less frequent and regular than farther south, and during some years practically continuous drought, economically very serious for the Indian, is experienced. The greatest rainfall occurs along the western coast of Mexico. This period, besides affecting profoundly the life of the natives, exercises also a great influence upon their well-being, thought, and culture.

The sources of water supply for man in this region are springs, pools, and streams; but during the dry season many of these become exhausted. This entails great hardship on the white man and his domestic animals, but usually affects less the native, who is better acquainted with the scattered springs and water pockets and in case of necessity moves to a more advantageous location.

The waters found in this vast region possess a variety of characteristics. Many pools and streams, especially in the northern part, are charged with mineral products, chiefly with the salts of the alkaline metals, and often they contain also considerable clayey matter. A few of the springs yield good, clear water, but numerous others are more or less charged with mineral substances. Sulphurous and other springs of various temperatures are found mostly in the mountainous parts of northern Mexico. No really poisonous springs have been observed. The springs, especially those containing hot sulphurous waters, are frequently utilized by whites for bathing, and are highly regarded locally for their medicinal properties. A good example of such springs is found at Chapala, Mexico. Water containing hydrogen sulphide is also used as a curative agent by some of the Indians, both internally and externally, though without rational knowledge of its properties.

The fauna and flora of the region are diminishing in importance to the Indian. The dangerous animals of prey as well as the larger game are, in many localities, being thinned out or exterminated, and the cultivated products of the soil are gradually superseding more and more the roots and seeds of wild plants used for food. There remain the smaller noxious animals, the parasites and insects (ticks, lice, worms, mosquitoes, flies, ants, spiders, centipeds, etc.), scorpions, and snakes, and also the ivies and other poisonous plants. These impose on the native not only a considerable struggle, but also much danger to health and even life.

III. INDIAN POPULATION

In the vast region which has been briefly described there are still to be found somewhat more than 100,000 Indians of pure blood. This aboriginal population, as well as the much more numerous white and mixed elements, increases, generally speaking, in density from north to south. In southwestern United States all the tribes, with the exception of a portion of the Papago, reside on reservations. The densest native population is found in Mexico, along the Rio Mayo in Sonora, in the Otomi country of the state of Hidalgo, and in the Tarasco region of Michoacan. The territory southwest and southeast from that covered by this paper has an Indian population that largely outnumbers the whites. Available official data give the numerical strength of the tribes studied as follows:

Population

A. UNITED STATES TRIBES VISITED

Tribe.	1890.[a]	1900.[b]	1903.[b]	1904.[c]	1905.[b]	1906.[b]
I. Southern Ute	[e] 985	[e] 995	941	962	[e] 887	845
II. Apache:						
White Mountain	([d])	1,928	2,028	2,058	2,090	2,072
San Carlos	([f])	2,542	[g] 2,578	2,226	2,148	2,145
Mescalero	513	482	439	[h] 452	460	460
Jicarilla	808	815	774	782	795	784

[a] Eleventh Census.

[b] *Report of the Commissioner of Indian Affairs.*

[c] Special reports of agents and *Report of the Commissioner of Indian Affairs.*

[d] In the enumeration of 1890 the White Mountain, Fort Apache, and San Carlos Apache are stated to have numbered together 4,041 individuals, which is undoubtedly an underestimate.

[e] The Report on Indians of the Eleventh Census contains the clause: "57 Southern Utes have recently been removed to the Uinta agency, Utah." Some of this number, apparently not counted with the Southern Ute in 1890, may have returned before 1900, thus causing the seeming increase in the tribe. In 1905 the Southern Ute are reported as follows: Fort Lewis school (unallotted Ute), 502; Southern Ute school (Capotes and Moache), 385; in 1906: Fort Lewis school (Wiminuche, unallotted), 464; Southern Ute school, 381.

[f] San Carlos, 1,066; Coyoteros, 489; and Tontos, 667; in addition to which there were 2 San Carlos and 2 Tonto pupils in the school at Phoenix.

[g] 1902.

[h] In the 1905 and 1906 counts are apparently included the Lipan, about 25 individuals, who formerly lived about the Santa Rosa mountains, northern Mexico.

Population—Continued

A. UNITED STATES TRIBES VISITED—Continued

Tribe.	1890.	1900.	1903.	1904.	1905.	1906.
IIa. Walapai	630	584	520	514	520	513
IIb. Havasupai	....	250	237	207	174	166
III. Navaho [a]	17,204	21,826	23,054	27,379	28,544	28,607
IV. Pueblos, all	10,283	[b] 10,015	10,881	10,526	10,870	11,076
Hopi	1,996	[b] 1,832	1,860	1,878	[b] 2,150	[b] 2,150
Zuñi	1,621	1,523	1,547	1,521	1,514	1,514
Rio Grande littoral [c]	6,766	6,660	7,124	7,127	7,206	7,412
V. Papago	....	....	[d] 4,422	4,790	4,823	4,981
VI. Pima	4,464	4,350	4,450	[e] 3,840	3,900	3,936
VII. Maricopa	315	345	360	403	350	344
VIII. Mohave [f]	[g] 2,500	....	....	1,628	....	1,843
IX. Yuma:						
On Yuma reservation	1,208	634	654	656	675	807
On San Carlos reservation	240	(?)	(?)	([h])	[i] 2	[i] 2

B. MEXICAN TRIBES VISITED

Tribe.	Latest official data.[j]	Estimates.
X. Opata	44	Pure-bloods probably fewer than 1,000; numerous mixed-bloods.[k]
XI. Yaqui	14,051	Whole tribe (including pacific Yaqui and the mixed-bloods) not far from 20,000 in 1902; fewer to-day.

[a] No count of this tribe is absolutely accurate, but a continuous increase is very probable.

[b] In these enumerations no account was taken of the Hopi living off the reservation, who in 1903 numbered 350. If this number was about the same in 1900, 1903, and 1904, which is probable, then the total number of Hopi for those years was, respectively, about 2,182, 2,210, and 2,234, and the total of all Pueblos in 1900 about 10,365. In 1905 the *Report of the Commissioner of Indian Affairs* gives: Hopi at Hopi school, 2,000; Hopi at Western Navaho school, 150; Report for 1906 gives the same data.

[c] For early accounts of the population of various pueblos, including Hopi, and for those of the Navaho, see the Report on Indians, *Eleventh Census*, 1890, Washington, 1894; the various reports of the Commissioner of Indian Affairs; and H. H. Bancroft's History of Arizona and New Mexico. For populations of the separate Rio Grande pueblos, see the Report on Indians, *Eleventh Census*, 407, and the *Report of the Commissioner of Indian Affairs*, 292, 1890 (also other reports of the latter series). Detailed data of the Twelfth Census (1900) on Indian population are not as yet available. For some of the results of this enumeration see first and second Population volumes.

[d] Earlier estimates more uncertain. No accurate count exists of the Papago off reservations and none at all of those in Mexico. The 1905 figures include the 1904 count of the Papago under the San Xavier farmer, with a new count of those at the Pima school.

[e] The 1904 *Report of the Commissioner of Indian Affairs* gives the number of Pima as 3,840; as there was no epidemic in the tribe during the year, and as the count agrees with that of 1905, the former estimates can not be correct; the agent's report for the year offers no explanation.

[f] No accurate census of the whole tribe available. At the Colorado River agency the Mohave numbered 640 in 1890, 662 in 1900, 649 in 1901, 523 in 1902, 510 in 1903, 508 in 1905, and 494 in 1906. No explanation of the gradual loss is given, and but limited data are available concerning other portions of the tribe (Fort Mohave, Needles). The 1904 count at Fort Mohave shows 892 individuals; that in 1905, 856; that in 1906, 829. The total population of the tribe for 1904 includes 228, and that for 1906, 520 Mohave, or Yavapai, known as "Mohave Apache."

[g] Approximate.

[h] None; removed.

[i] The 1905 *Report of the Commissioner of Indian Affairs* gives also 60 "Yuma in Arizona," probably the "Yuma Apache." The 1906 report gives 27 "Yuma Apache" at Camp McDowell.

[j] Kindly furnished, as "the latest official numbers" in November, 1904, by Dr. Antonio Peñafiel, the general director of Mexican statistics.

[k] For literature on earlier estimates of the numbers of Opata, Yaqui, and Mayo see author's Notes on the Indians of Sonora, Mexico, *American Anthropologist*, n. s., VI, no. 1, Jan.–Mar., 1904.

Population—Continued

B. MEXICAN TRIBES VISITED—Continued

Tribe.	Latest official data.	Estimates.
XII. Mayo	17,172	About 20,000.
XIII. Tarahumare	19,778	
XIV. Tepehuane:		
Chihuahua	431	Northern and southern included, 3,000 to 4,000.
Durango	3,221	
XV. Tepecano	....	300 to 400.
XVI. Huichol	3,818	3,000 to 3,500.
XVII. Cora	3,187	3,000.
XVIII. Nahua	....	Several thousand; close estimate very difficult.
XIX. Tarasco	41,012	
XX. Otomi:		
Hidalgo	93,281	
Mexico	55,251	
XXI. Mazahua	45,797	
XXII. Tlahuiltec (Aztec): Morelos	26,566	No longer exist as tribal entity; accurate count impossible.

The proportion of mixed-bloods differs in the various tribes. It is insignificant in most of the northern tribes and in those of the Sierras, quite small in some of the Rio Grande pueblos (for example, Santo Domingo) and among the Yaqui and Mayo, and moderate among the Opata, Nahua, and Otomi. But even among the latter there is no dearth of pure-blood individuals and even whole families. It was full-bloods alone who received attention. The recognition of mixed-bloods is not generally difficult after proper experience has been acquired.

IV. SUBDIVISIONS OF THE TRIBES[a]

Their Location and Physical Types

The Southern Ute, or, as they call themselves, *Nu-chi-uh* or *No-o-che,* comprise the bands known as Capotes ("mountain people"), Moache ("plains people"), and Wiminuche ("poor people"). All these live in southern Colorado, in the semiarid region about Ute mountain, Mesa Verde, and the Fort Lewis school, and in the shallow, now well-watered, valleys about the agency at Ignacio. The Wiminuche, the strongest of the three bands (estimated to number 500 in 1899), occupy the country about the Navaho Springs subagency (around Ute mountain and a part of Mesa Verde) and the Fort Lewis school, and have until recently retained their primitive habits and customs. The other two bands live near Ignacio and are somewhat more civilized.

---

[a] For further details consult Handbook of American Indians, *Bulletin 30, Bureau of American Ethnology.*

The people generally known as Apache, but who call themselves *N'dē*, are to-day confined to three reservations in the Southwest. Of these the largest is in southern Arizona, and its two divisions are known as the White Mountain and the San Carlos Indian reserves; the second is the Mescalero reservation, lying largely in the Sierra Blanca of southeastern New Mexico; and the third is the Jicarilla reservation, situated in northwestern New Mexico. Besides these there are 98 Chiricahua prisoners of war at Fort Sill and a band of 155 so-called Kiowa Apache under the Kiowa agency, Oklahoma; a small free band of Chiricahua are believed still to be in the mountains of northern Chihuahua. The Apache segregated on the White Mountain and the San Carlos reserves, in Arizona, include the tribes known as Tontos, Pinaleños, Mimbreños, Coyoteros, and Gileños, together with settled Chiricahua and remnants of tribes or bands formerly known to the whites under still other appellations. It is doubtful if these divisions were at any time separate tribes in the strict sense of the term; more likely they were bands living more or less apart and were given the above-mentioned names by the Mexicans.[a]

Besides the foregoing subdivisions of the Apache there are found in the Southwest two other Athapascan tribes, the Navaho in New Mexico and Arizona, and the Lipan until 1904 around Piedras Negras and the Santa Rosa mountains near the Mexican boundary in Chihuahua, but now removed to the Mescalero reservation in New Mexico. The Lipan, reduced to about 30 individuals, are a true branch of the Apache. The Navaho, notwithstanding the practical unity of language and doubtless some Apache mixture, are much more closely related both physically and ethnically to the Pueblos.

There are also two small tribes in northern Arizona who speak the Yuman language, but physically approximate very closely the true Apache, namely, the Walapai (in their own language *E-pa*) and the Havasupai. Small bands in Arizona known as the Mohave Apache or Yavapai, and the Yuma Apache, both now located mainly at the old Camp McDowell, are very nearly pure contigents respectively of the Mohave and the Yuma. Until recently they lived on the San Carlos reservation, but held aloof from the Apache and acquired neither their blood nor their language.

The Apache group is one of great interest in that it presents a clearly defined physical type, radically different from that of most of its present neighbors, as well as from that of the ancient inhabitants of the same territory. Examination of the living, as well as of the skeletal remains, shows remarkable homogeneity, notwithstanding a slight Mexican admixture through former captives. The Jicarillas alone seem to have mingled to a somewhat greater extent with other tribes. They intermarried in quite recent times with some of the inhabitants of Taos pueblo and with the Ute, but the majority still distinctly show Apache type. The Walapai and the Havasupai seem to be almost entirely free from foreign mixture.

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[a] The names of these bands, and the localities which they occupied, have been summarized by Bancroft, Native Races, I, 473 et seq. For other bands see the author's Notes on San Carlos Apache, *American Anthropologist*, n. s., VII, no. 3, July-Sept., 1905, 480.

The Havasupai, popularly known also as Supai and as Coconino, live most of the year in the deep, narrow Cataract canyon through which flows a tributary of the Colorado; but on the approach of winter they move to the surrounding mesas, where they construct dwellings of primitive form and devote themselves to hunting.

The Navaho, calling themselves *Di-nē*, are an independent, self-supporting tribe who live on and considerably beyond the borders of a great semiarid reservation extending over parts of Colorado, Utah, New Mexico, and Arizona. With the exception of the much-mixed Cherokee, this is the largest tribe in the United States, and in every way one of the most promising. The writer visited this people in all parts of their domain. Notwithstanding their mixed Indian origin, the Navaho possess a characteristic physiognomy, a great degree of uniformity in physical features, and practically the same habits throughout their extensive territory.

Through the writing of Fewkes, Stephen, Mindeleff, Owens, Voth, Hough, and others, the Hopi are among the best known of the indigenous peoples of southwestern United States. The tribe lives in seven villages, of which five are very old and two (Sichomovi and Hano) are historic; with the exception of Oraibi none of the villages occupies its prehistoric site. Hano was settled about the year 1710 by Tewa people from near the Rio Grande, and its people although only partially assimilated with the Hopi are officially classed with the latter. These seven pueblos are situated on three high neighboring mesas, nearly 7,000 feet above the sea level, in the sandy, dry, arid region of northeastern Arizona. The Hopi are a poor sedentary people, subsisting almost entirely by agriculture; and in their physical characters they closely resemble the Zuñi.[a]

The Zuñi, or, as they call themselves, *Shiwi* or *Ashiwi*, are a large southern branch of the Pueblos. These Indians, well known through the studies of Cushing, Mrs. Stevenson, and others, occupy a reservation situated a little more than 30 miles south of Gallup, New Mexico. They live in one large old village (called by them Shiwinakwin), built in an extensive plain traversed by a small stream—the Zuñi river. They occupy also, in outlying fertile valleys, the villages of Ojo Caliente, Nutria, and Pescado, where but few live permanently, but to which numerous families move during each farming season.

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[a] For an account of recent disturbances affecting Oraibi and resulting in the establishment of an additional settlement, see *Report of Commissioner of Indian Affairs* for 1906 and especially Report for 1907.

The Papago (in their language *O-o-tam* or *Pa-pa-ve O-o-tam*) occupy more than 20 small villages [a] along the frontier of Arizona and Sonora. The largest of these settlements is San Xavier, south of Tucson. More or less isolated rancherias extend southward to near the Rio de Altar, in Sonora. A small separate body of Papago are settled west of Torres, a station on the Sonora railway a short distance south of Hermosillo. The tribe has a slight Spanish admixture, but preserves to a great extent its independence and many primitive habits. Being closely related in language to the Pima, the Papago were supposed to be physically identical with them, but such is not the case, although there is considerable blood relationship between the two tribes, due to intermarriage.

The Pima know themselves as *Ak-ki-nal-tam-o-tam* (''river people'', referring to the Gila, their principal stream). They have intermarried with the Papago and to a slight extent with the Maricopa also. The Pima are a very interesting tribe physically, being closely related in this respect to the ancient people of southern Utah in the north, the Tarahumare in the south, and the great race of American dolichocephals in general.

The Pimas Bajos, or Nevome, still live along a part of the upper Rio Yaqui, as well as in certain localities about Ures (e. g., Pueblo Viejo), and a few of this tribe are found in the district of Magdalena, in Sonora.

The Mohave know themselves as *Mk-hā-ve* (pronounced by some mak-hā-ve, a-mak-hā-ve, a-mok-hā-ve), and are separated into two groups. One of these is on the Colorado River reservation, the other and larger about Needles and Fort Mohave. A closely related tribe, formerly known as Yavapai, but now officially called Mohave Apache, are settled on the Verde and at old Camp McDowell. The Mohave, who are of almost pure blood, are physically related to the Yuma and some of the Pueblos, as well as to the Mission Indians of California.

The Yuma (who call themselves *Ku-tsa-ni*) number more than 800, divided into three bands. One of these, numbering fewer than 30 individuals, is at Camp McDowell; another, of about 50 persons, is settled on the eastern bank of the Colorado near the boundary line; and the third, the main body of the tribe, live in the low, alluvial, hot region along the western bank of the lower Colorado, mainly in the neighborhood of the school at Fort Yuma, California. While closely allied physically to the Mohave, many exhibit characteristics of physiognomy which remind the observer of the Navaho.

The remnants of the Opata are found principally along the San Miguel river, in Sonora, but they are met with also at many points farther west, in their ancient territory. This people is disappearing through voluntary amalgamation with the Mexicans.[a]

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[a] See the Map of Papago Indian towns by C. W. Wood, facing p. 142, Report on Indians, *Eleventh Census*, 1890, Washington, 1894.

The still numerous Yaqui remained centered along the lower Rio Yaqui until a comparatively recent date, but they are now scattered over the larger part of southern Sonora. Physically the tribe is related to the Pima, but it contains some Mayo and other admixture.

The Mayo, the largest tribe of Sonora, occupy practically the same region as they did in the sixteenth century—the lower part of the Mayo valley and much of ancient Ostimuri.

The Tarahumare are a populous tribe of Chihuahua, and are still in a primitive condition. They live in the barrancas and lower lands of a very rugged country situated largely in the Sierra Madre. Numerous families inhabit caves during at least a portion of the year.

The Tepehuane, or, as they call themselves *O-o-dam*, the traditional invaders who formerly ranged over the territory from southern Chihuahua through Durango to Jalisco and Tepic, now consist of two moderately large groups of about equal size, one in the extreme north and the other in the extreme south of their former territory. The northern group, of which but little was seen, is concentrated mainly in the district of Guadalupe y Calvo, but scattered families are found in the mountainous country along the Rio Colorado and thence southeastward as far as the dependencies of Santiago de Papasquiaro. The center of the southern Tepehuane domain is the rough, elevated, healthful region in southern Durango, southwest of Mezquital, about the tributaries of the river of the same name. The principal settlement in this district is Huktir, or, as it is more commonly known, Santa Maria de Ocotan.[b]

The Tepecano, a small but interesting tribe, probably a branch of the Tepehuane, live at and about Askeltan, in the valley of the Rio de Bolaños. A small contingent of the tribe within recent times has settled farther south, near the Rio Santiago.[c]

The Huichol occupy the rugged sierra in the state of Jalisco, between the country of the Tepecano and that of the Cora. They live mostly in scattered rancherias, but in winter and during ceremonies they assemble at a number of villages, the principal of which are Santa Catarina, San Andres, and San Sebastian.

The Cora are scattered from the northern part of the territory of Tepic to near the Rio Santiago, mostly west of the Rio Jesus Maria.

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[a] For details concerning the Sonora tribes, see the writer's Notes on the Indians of Sonora, Mexico, *American Anthropologist*, n. s., VI, no. 1, Jan.-Mar., 1904.

[b] Other southern Tepehuane villages are Joconostla, Calendaria, Temoaya, Teneraca, Tascaringa, San Francisco, or Koshweglim, and San Francisco de las Lajas. In addition, some Tepehuane are settled with Indians speaking the Nahua and some whites in Pueblo Viejo Pueblo Nuevo, and Milpillas Grande, with Milpillas Chico, in Tepic.

[c] For more details see the writer's Chichimecs, etc., *American Anthropologist*, n. s, V, no. 3, July-September, 1903.

Like the Huichol, most of the tribe live during a large part of the year in isolated rancherias. After a harvest is completed, and during fiestas at other times in the year, the families congregate in villages, the chief of which are Iauchke, or Nayar, on the famous Mesa de Tonate, Chusite, or Jesus Maria, on a portion of the western border of the river of the same name, and Kwaimaluse, or Santa Teresa, on the highland in the northwestern part of the Cora country. Lesser villages are Washihap, or Dolores, Wainamota, Wazamota (formerly Tepehuane, at present probably a mixed population), Kwarata, or San Francisco, and Diskatan. The people are physically allied to the Huichol, Tepecano, Tepehuane, the Meccos, Mayo, Opata, a Papago element, and the Yuma-Mohave.

The Tarasco, who live in Michoacan, are a large tribe, in many localities still of pure blood, in others mixed. Their principal settlements lie south and east of Zamora and around Lake Patzcuaro. The writer's investigations were conducted mainly in the large village of Tarequato. Physically the Tarasco are closely allied to the Tarahumare in the north, and to the Aztec and Otomi peoples in the south.

The Otomi are a very large tribe, but although still occupying a nearly continuous territory, have long since ceased to form a unit. Many of the Otomi are still full-bloods and speak their own language, but political cohesion extends only a short distance beyond the villages. In numerous localities there is considerable mixture with Mexicans. The general social status of the people, especially where mixture prevails, is of the lowest. The Otomi are settled in the somewhat mountainous region extending northeast, north, and northwest to west from the City of Mexico, over part of the Federal District, and parts of the states of Puebla,[a] Hidalgo,[b] Queretaro,[c] and Mexico,[d] a region covering approximately 10,000 square miles.[e] In the state of Mexico the Otomi live in close proximity to the distantly related Mazahua, but the two tribes mingle but little.

The Mazahua, a smaller but generally better preserved tribe than the Otomi, live chiefly in a number of villages[f] in the district of Ixtlahuaca, state of Mexico. According to all that could be learned of this people, through both inquiry and anthropometric examination, the Mazahua are distinct from the Otomi, although both show blood relationship due to intermixture. They are more closely related to the Tarasco.

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[a] Along the northern boundary to beyond Pahuatlan.

[b] Especially in the districts of Fajayucan, Ixmiquilpan, Octopan, Tula and others.

[c] District of San Juan del Rio.

[d] Districts from Lerma to San Felipe (along the Mexican National railway), and northward.

[e] The greater portion of this, however, belongs to the whites.

[f] San Bartolo, San Pedro de los Baños, San Juan de los Jares, San Francisco, Santiago Cuisilapa (or Xilapa), Los Reyes, Xocotitla, San Antonio, Santo Domingo, Concepcion de los Baños, Totonilco, Tlacomulco, San Lorenzo, Santa Cruz, and others.

The Tlahuiltec, a branch of the Aztec,[a] live in villages in the state of Morelos.[b] Cuautepec, a large village east of Cuernavaca, is entirely occupied by them, a large majority of the inhabitants being full-bloods. Tetelcingo, another large settlement, containing 1,500 to 2,000 inhabitants, lies 2 leagues north of the city of Coautla.

The physical relations of the tribes examined, which, however, should not be understood as indicating tribal identity, are, briefly, as follows, the differences between I and II[c] being less than those between either of these and III:

I.	II.	III.
Apache (all branches).	Maricopa.	Pima.
Lipan.	Mohave.	Papago.
Walapai.	Yuma.	Ute and Paiute.
Havasupai.	Navaho.	Some of the Pueblos.
	Western and some of eastern Pueblos.	Tarahumare.
	Opata.	Yaqui.
	Mayo.	Tarasco.
	Tepehuane.	Mazahua.
	Cora.	Aztec.
	Tepecano.	Otomi.
	Huichol.	
	"Meccos."	
	Nahua (Jalisco)	

All these people live under conditions and have habits which differ more or less from those of the whites, and which are capable of influencing their normal physiological functions as well as their health. The following chapters touch upon the chief of these factors.

V. PERSONAL ENVIRONMENT

CLOTHING

Clothing is of considerable hygienic importance in the life of the Indian, particularly in southwestern United States, where he must adopt, in place of his simple native garments, the shoes, hat, underclothing, and outer apparel of the whites. In Mexico the change is far more gradual and less radical.

The Indians not affected, or affected but little, by the influence of whites usually dress rather scantily at all seasons. Among the more primitive tribes the men wear regularly sandals or moccasins, breechcloth, and belt, and during the cooler parts of the day have about them a light blanket; they wear less regularly simple trousers and shirt, pouches suspended from the belt or from the shoulder, and a palm hat (pl. I). When it is warm the older men especially like to dispense with everything except the breechcloth, the young men doing the same only in races and certain dances. On the road the light trousers are rolled up as high as possible, leaving the limbs bare (pl. I). The women generally wear a single skirt, with a shirt or blouse, or a single body garment taking place of both, and a belt. Indoors the covering of the upper part of the body is often removed. They do not always possess a blanket, and go mostly with head and feet bare. Children up to 1 year of age are usually kept, well swathed, in the baby carriers; from 1 to 5 or 6 years they are often left, except when it is quite cold, entirely naked, or they run about clad in a shirt only; later on they are dressed like adults.

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[a] See Francisco P. Reyes's Manualito de la Geografía del Estado L. y S. de Morelos, Mexico, 1890.

[b] There are no definite boundaries to the tribe. The people blend on all sides with other Indians and with mixed-bloods.

[c] Particularly with regard to group I and the Maricopa.

One can observe all stages of approach from the simple native dress to the regular attire of civilized people. The change is most apparent in the tribes of the United States. The native woolens and skins give way first to trade cottons and then to the usual clothing of the whites. Shoes take the place of sandals, warmer felt hats are substituted for those of palm, the Mexican Indian women become accustomed to the *rebozo*, which covers the head and shoulders, and overcoats supplant blankets. It is noticeable that the Indian soon acquires a preference for clothing himself abundantly and even to excess.

The whole process of change in quality and quantity of clothing must exercise considerable influence on the circulation and texture, as it does on the color, of the skin. It must affect the resistance of the body to the elements, and it is logical to suppose that before the change becomes a well-established habit it reacts unfavorably on the health of the Indian.

The subject of hair dressing and personal adornment, connected with that of clothing, has more of psychologic and ethnologic than of hygienic interest, yet there are minor exceptions. The long, artificially twisted and matted hair of the Yuma, Maricopa, Mohave, and of a few Pima is of necessity more or less unclean and conduces to the presence of vermin.[a] Among the Navaho, Walapai, Pima, and others the chi, or red paint, a mixture of red ocher and fat, is often applied to the cheeks of women and children as a hygienic measure to protect the skin against the sun and dry winds. Again, the tattooing, practised most among the Mohave, Yuma, and Pima, is undoubtedly attended with physical inconveniences and dangers as among the whites. Tlahuiltec women color their hair with the juice of a plant known locally as *shok-il-it*. This turns the ordinarily black hair at first greenish and then reddish yellow. It is difficult to judge of the effect of this treatment on growth or vitality of the hair, but a head of good hair among these women is uncommon.

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[a] These twists are from time to time cleaned by quite an original process. This consists in working into the hair a mass of the fine river mud. The head is then wrapped with a handkerchief and the mud allowed to dry. It may be allowed to remain only overnight or be worn longer, after which it is thoroughly washed out, the hair being then dressed as before. The sap of the mesquite may be added to the mud, making the mixture not only more effectual to kill the vermin, but also to stain the hair (which in some cases is more or less sunbleached) a fine black, very much like the natural color.

DWELLINGS

The character, degree of segregation, and especially the site of a dwelling and its cleanliness, are all items of much hygienic importance. The dwellings of the Indians of the region under consideration may be divided into permanent and temporary structures. The first include dwellings built more or less after the style of those of the neighboring whites, of the aggregate pueblo structures (pl. II, *b*), and various brush, reed, and earth dwellings (pls. II to XII); the second comprise shelters and brush structures of varying forms, and tipis or tents (pls. VIII, IX, *c*, XI, *d*).

All except the modern Indian dwellings possess certain points in common. With the exception of some pueblo dwellings, the native houses are windowless and are provided with only a small opening for entrance and exit, which, when the dwelling is occupied, is usually kept closed with a blanket. The only additional aperture is a smoke-vent in the roof or at the apex. Owing chiefly to the absence of larger openings in the walls, the inside of the dwelling is much darkened, but possesses the merit of being warmer in winter and cooler in hot weather than the outer air. Ventilation is good in only the less substantial structures, particularly those made of brush. In the earth-covered hogans (pls. II, *a*, VI, *a*), in the hemispherical Pima mud dwellings, in some of the adobe houses, and especially in the pueblo communal rooms or kivas, ventilation is poor even when aided by fire. Over night, or when a large number of Indians congregate in such a dwelling, as they often do for social meetings or for gambling, the air becomes foul and deleterious to health. The smoke, also, is annoying and irritates the eyes. Dampness of the dwellings, even of the more massive structures, is unknown during the dry season, but in rainy weather humidity can not be avoided, and houses of all kinds generally become less comfortable and healthful.

In the arrangement of Indian dwellings two opposite tendencies are noticeable, one apparently the result of long-continued habit, due to necessity, the other arising from social impulses. Every Indian family (with exceptions among the Pueblos) builds its dwelling isolated, yet at the same time there is an inclination toward congregation. The common outcome of these opposed motives is a scattered village. In a typical Indian village, the pueblo excepted, the cluster of dwellings belonging to each family is sufficiently isolated to be free from interference by its neighbors (see especially pls. VII, XII). During the farming season many such villages (including some of the pueblos) are nearly deserted, their inhabitants having moved to the widely separated and sometimes remote ranches. The tendency toward isolation originated, it would seem, in conditions of Indian farming, due in turn to the nature of the country,[a] and manifested as it is even in the villages, it constitutes a favorable hygienic agent of considerable importance.

The favorite site for an Indian dwelling or village is an elevated spot, convenient though not necessarily very near to a perennial water supply sufficient for domestic purposes. No actual hygienic precaution is taken in the selection of the site. The older villages were usually built with a view to defense, while the more modern Indian settlements, as well as the ranches, are situated according to convenience or necessity. The majority of the villages that are situated on high land or on slopes are naturally salubrious, but the situation of some of those on low ground, as for instance that of the Yuma (pl. VII), must contribute largely to the ill health of the inhabitants. With the exception of shallow pits in dry river-beds, no wells are dug.

Inside the Indian dwellings that have not been influenced by civilized ideas the only furniture is an occasional box for the more valuable articles of the household, and one or two low stools. In a Pueblo dwelling or a Navaho hogan, a broad earthen bench may extend along the wall. The ordinary clothing, blankets, and the few utensils or other articles which the family possesses, hang or lie about wherever convenient. In the center or in a corner of the living room is an open or partially open fireplace. The rest of the floor may be bare, but more commonly it is partially covered with a mat, blankets, or a sheepskin, serving both as seat and bed. Within the dwelling there is no provision for privacy.

What may be considered an adjunct to the dwelling among some of the tribes north of the Mexican line is a small hut employed occasionally for a sweat bath. Good examples of such huts may be seen among the Navaho. Usually, however, they are built when needed.

Except among the degraded, the old, or where the woman is indolent, the dwelling and its near surroundings are generally kept in fairly good order and reasonably clean. During the day there is a freedom from bad odors in and about the dwelling. Some of the brush houses are pleasantly fragrant. The Hopi and the Zuñi have the habit of storing urine, to be used as a mordant, in jars near their habitations, and the decomposing contents of these receptacles, particularly when overflowing during a rain, produce offensive odors.

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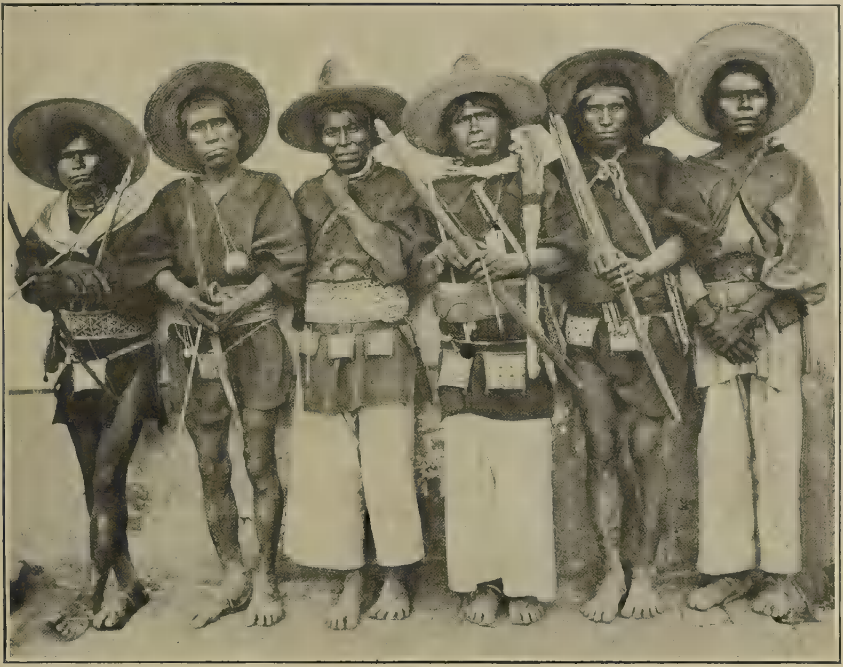
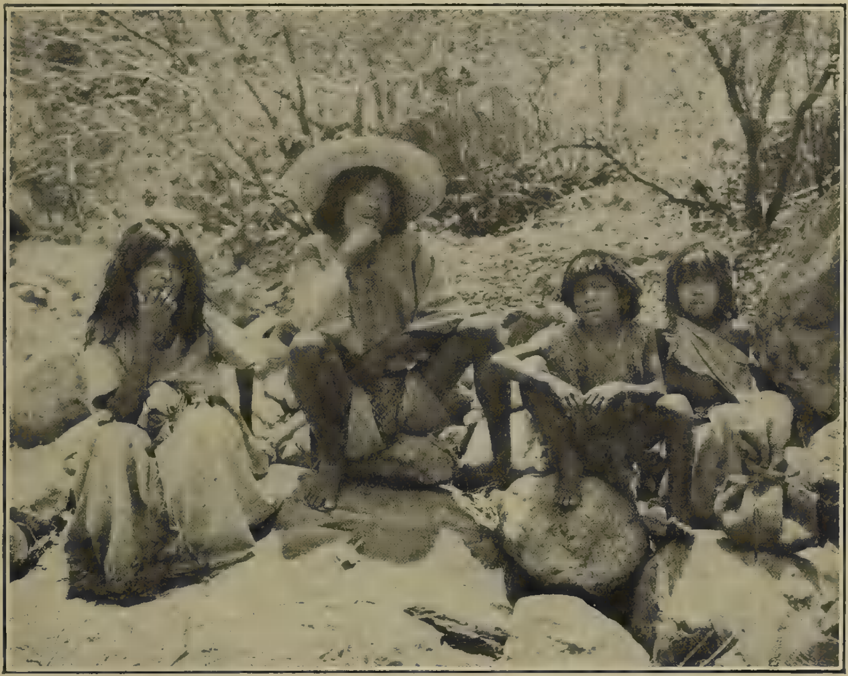
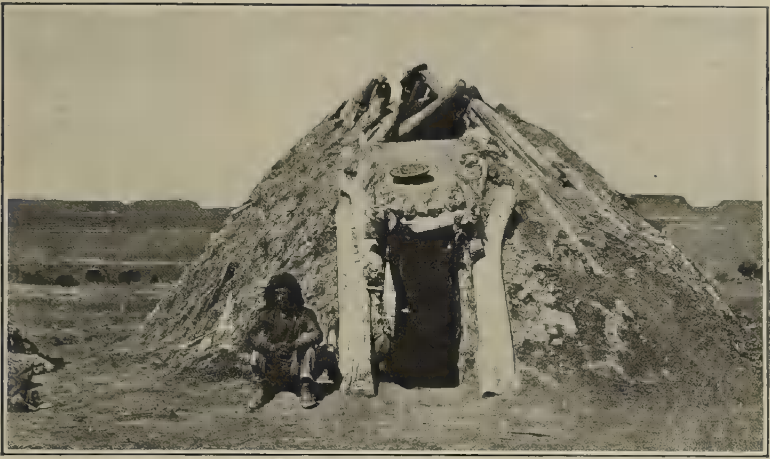
[a] In the more mountainous and arid parts of the region lands available for farming are very seldom found in large continuous areas.

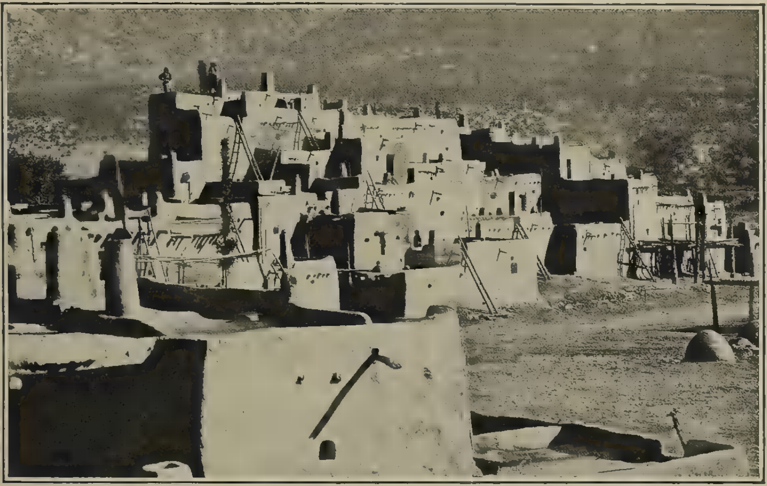




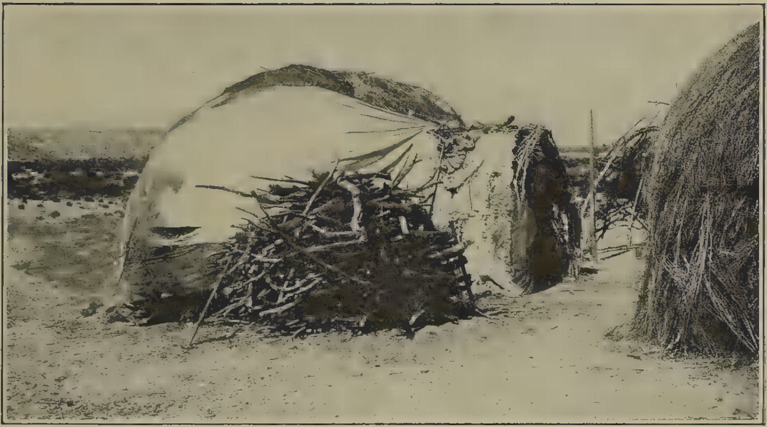
GROUPS OF HUICHOL IN NATIVE COSTUME



a NAVAHO HOGAN

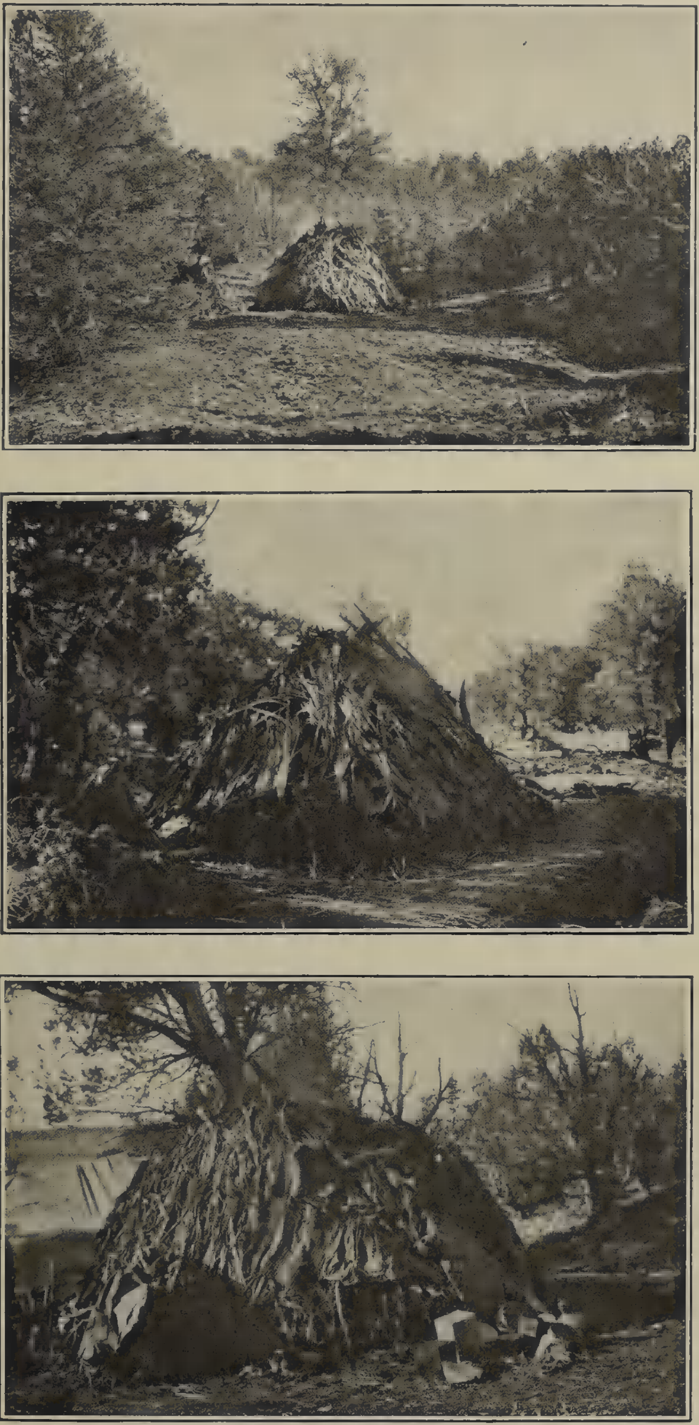


b TAOS, SHOWING TYPICAL COMPOSITE PUEBLO DWELLINGS

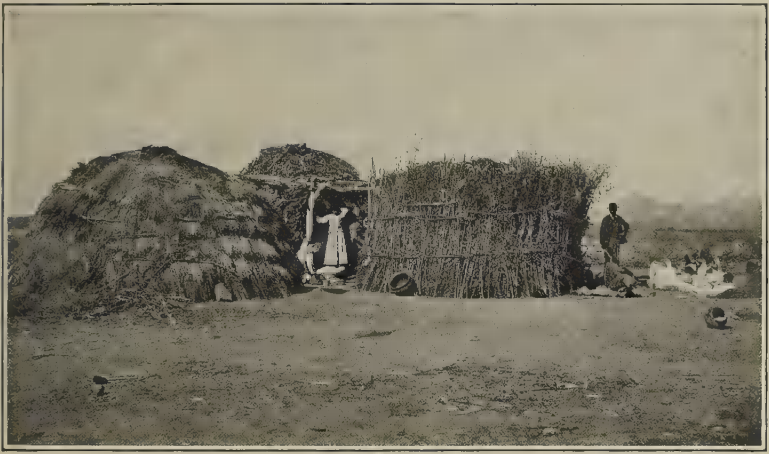


c TYPICAL DWELLING OF WHITE MOUNTAIN AND SAN CARLOS APACHE

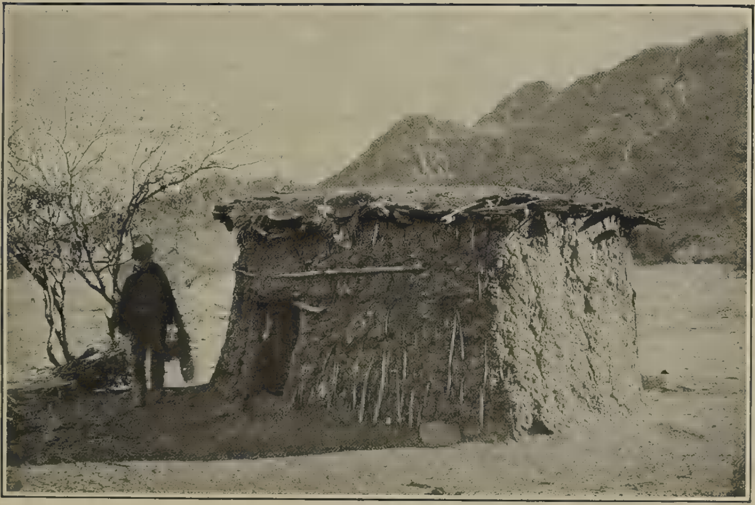
TYPICAL INDIAN DWELLINGS—NAVAHO, PUEBLO, APACHE



WINTER DWELLINGS OF THE HAVASUPAI

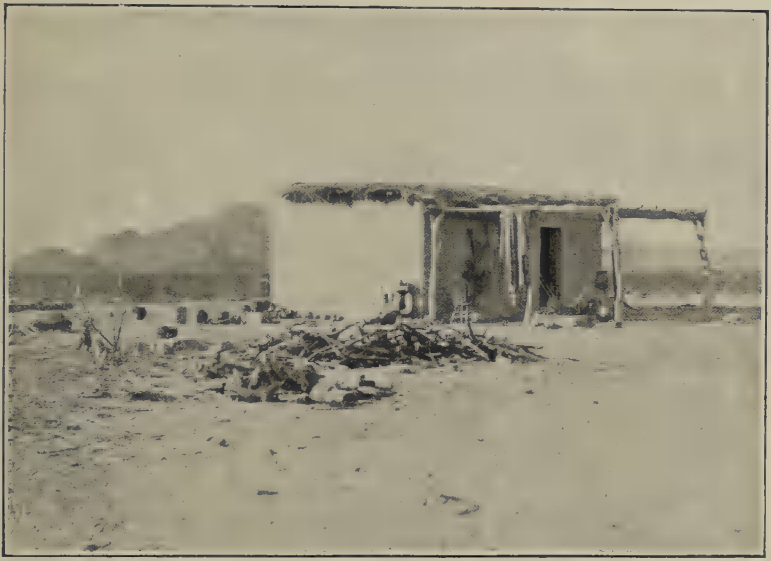


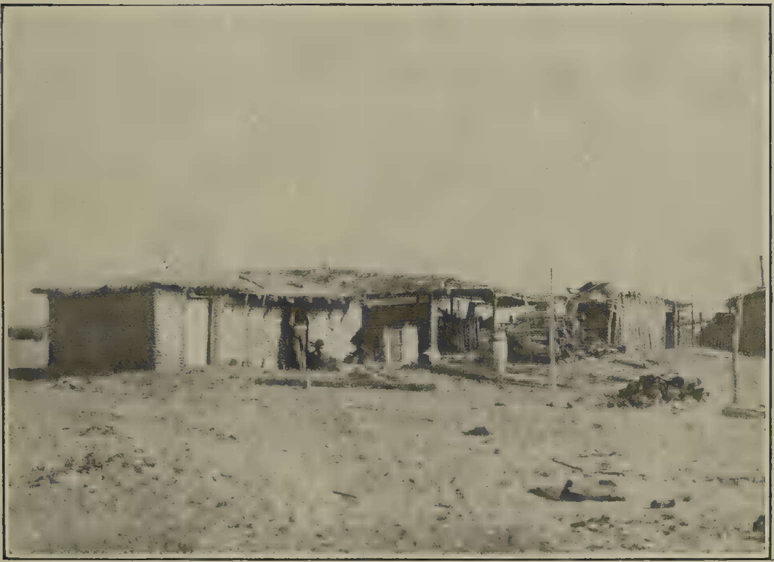
BRUSH HOUSES



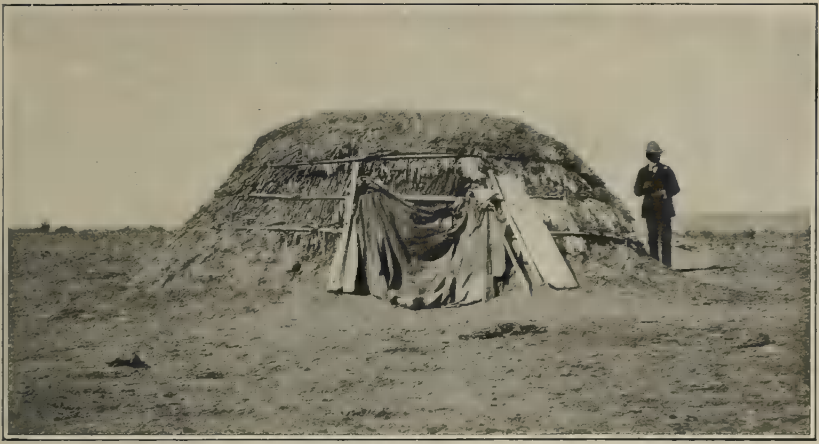
REED-AND-MUD HOUSES

PAPAGO DWELLINGS

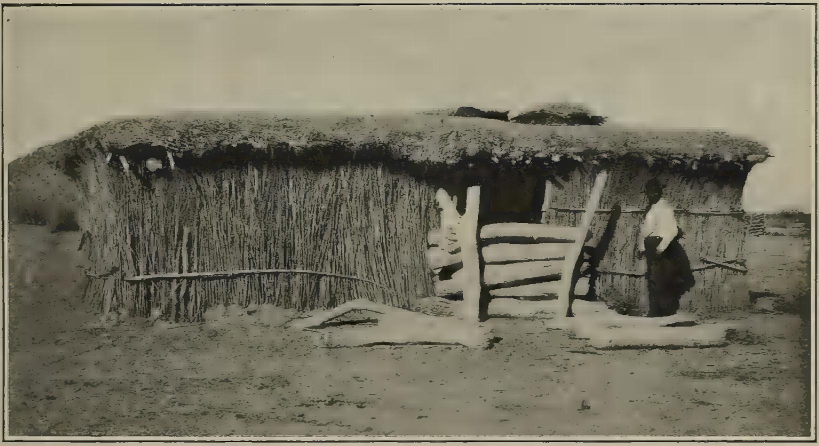




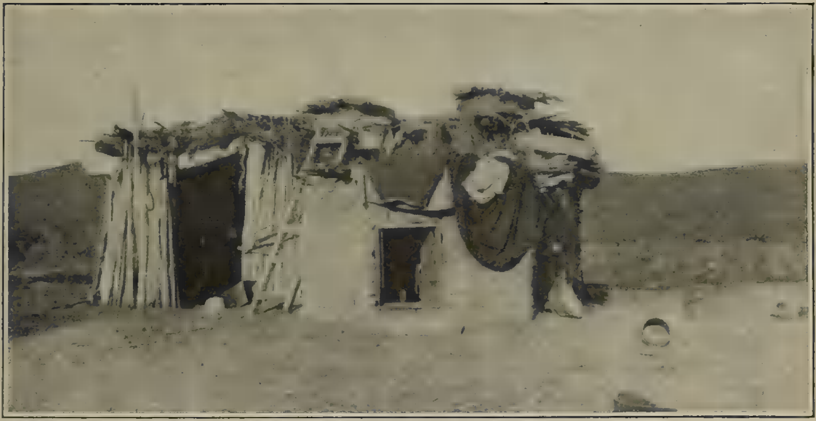
ADOBE DWELLINGS OF THE SAN XAVIER PAPAGO



a MADE OF RUSHES AND ADOBE



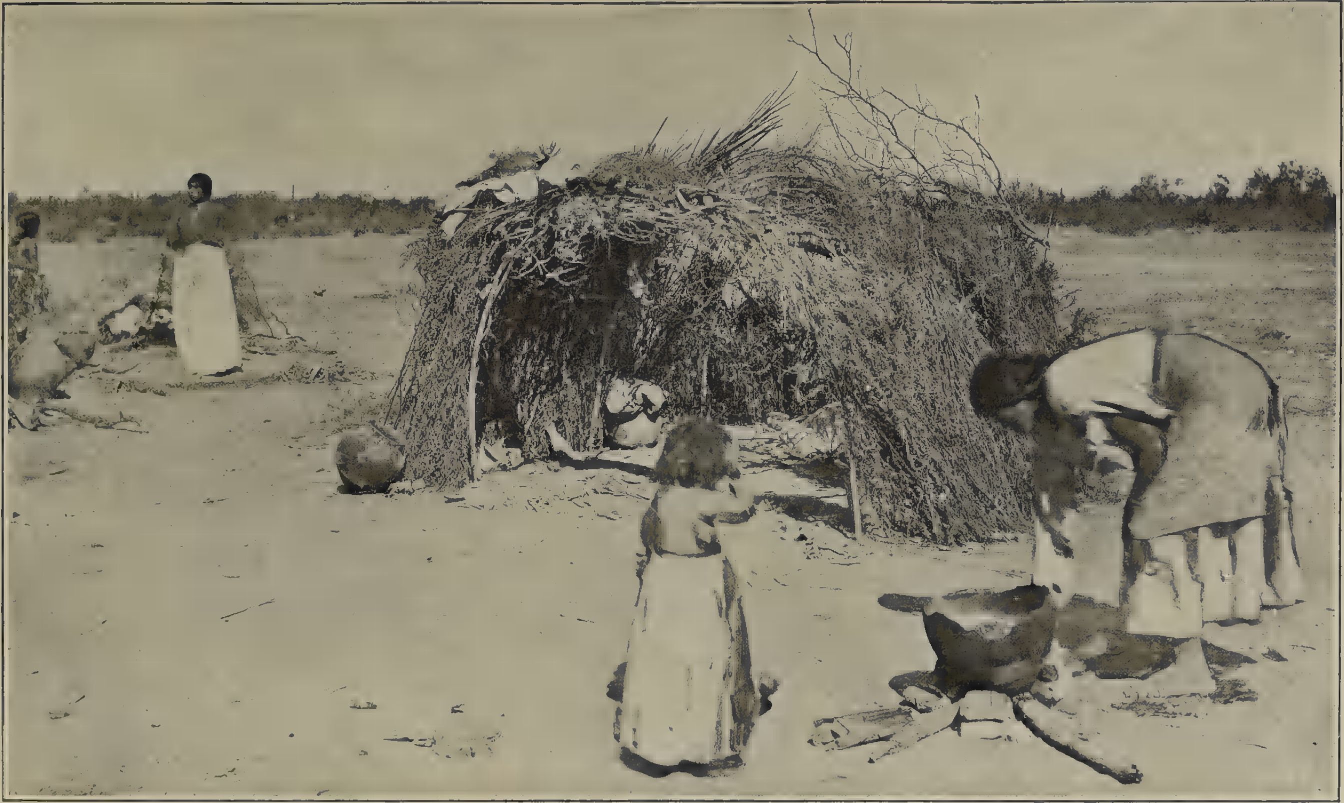
b WALLS OF RUSHES; COVERED WITH RUSHES AND ADOBE



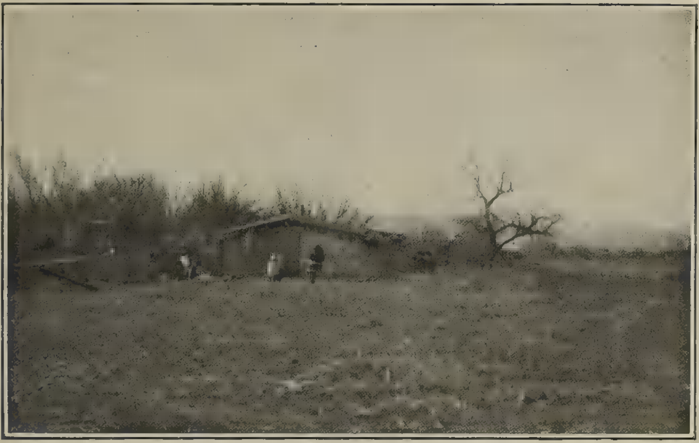
c MADE PARTLY OF ADOBE BRICK

PIMA DWELLINGS

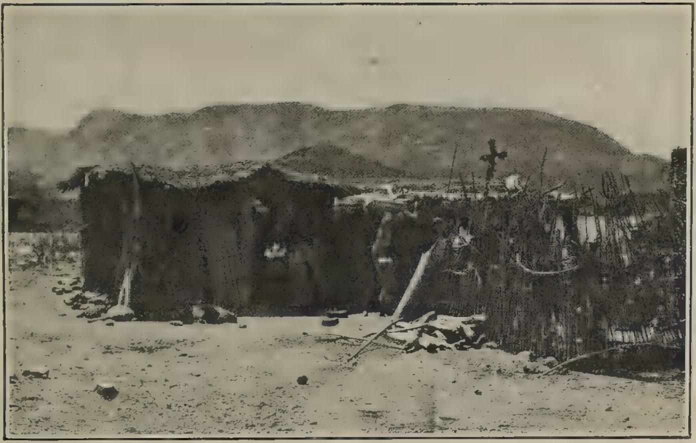
THE YUMA VILLAGE IN THE LOWLANDS AT FORT YUMA, CALIFORNIA



A SERI DWELLING, SONORA



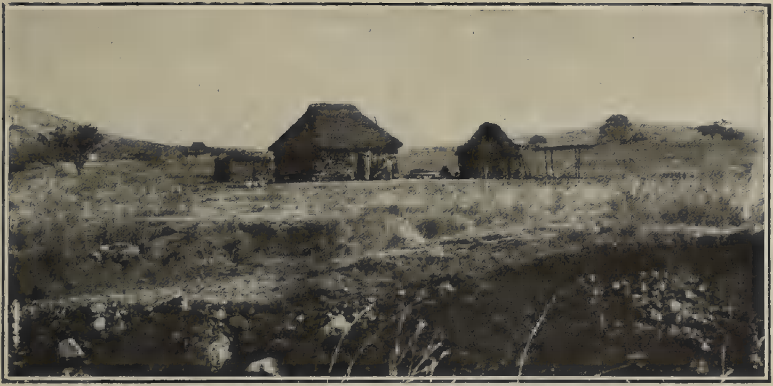
a MOHAVE DWELLING NEAR FORT MOHAVE



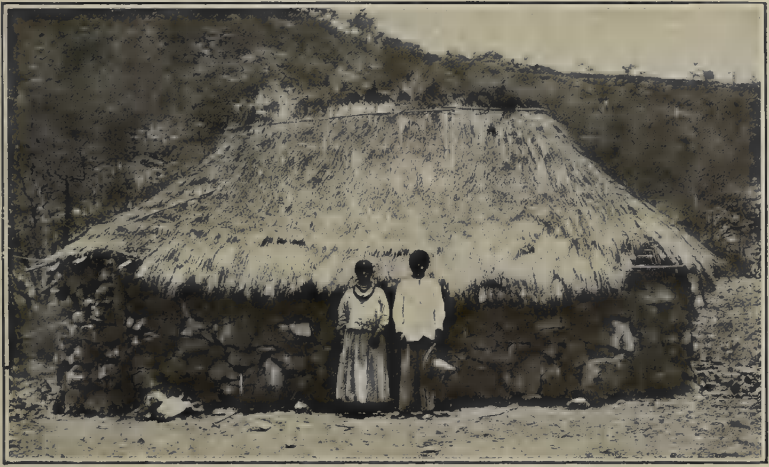
b OPATA DWELLING AT TUAPE, SONORA

c YAQUI SUMMER SHELTER, SONORA

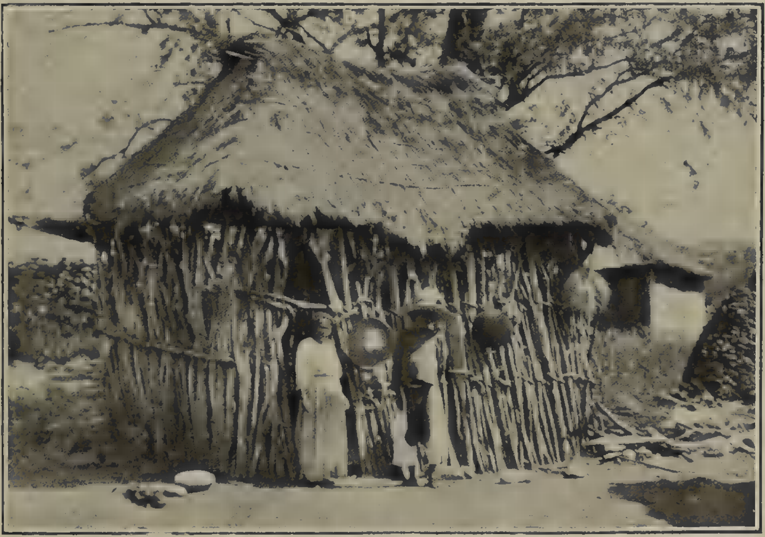
MOHAVE, OPATA, AND YAQUI DWELLINGS



"CHICHIMEC" DWELLING AT SAN PEDRO, ZACATECAS

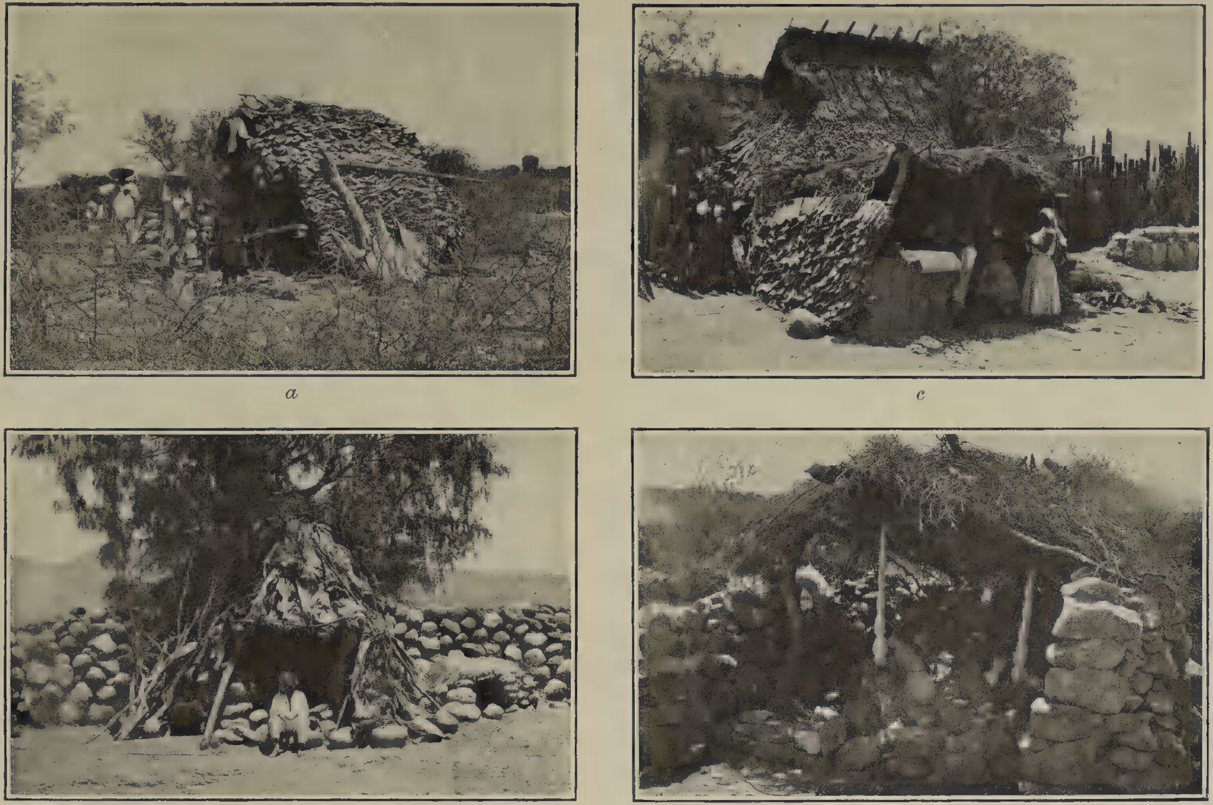


HUICHOL DWELLING NEAR SANTA CATARINA, JALISCO



CORA DWELLINGS AT JESUS MARIA, TEPIC

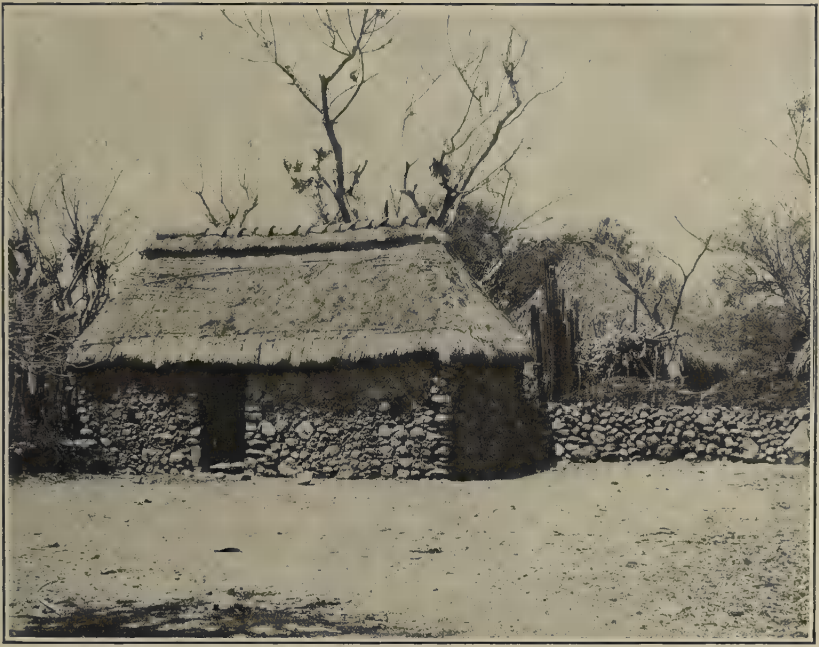
"CHICHIMEC," HUICHOL, AND CORA DWELLINGS

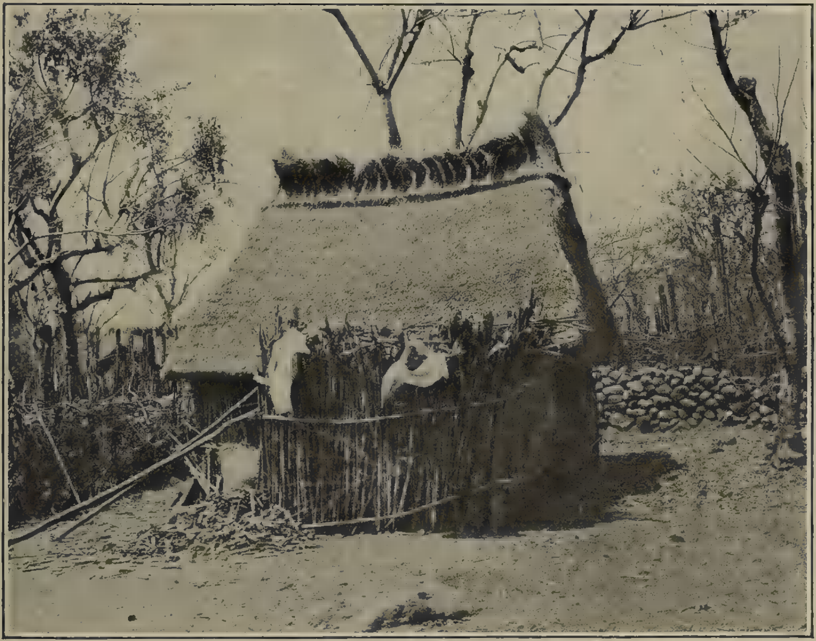


a *c*

b *d*

OTOMI DWELLINGS, HIDALGO





AZTEC DWELLINGS, MORELOS

Personal necessities are everywhere attended to in any convenient place, such as the yard, the rear of the dwelling, and even, as among the Hopi and the Zuñi, in the streets of the villages. No such thing as a closet, a cesspool, or a sewer is known. Here the dry air and the wind and rain perform a great service for the Indian. House refuse is deposited in heaps at a convenient distance from the dwellings.

Among all but the more civilized tribes, blankets and clothing are very seldom washed. Many of the Indians have no spare clothing for use while one set is being cleansed. Except among the lowest classes of Indians a struggle against vermin is carried on to about the same extent and with about as much success as among their white neighbors of the lower classes.

Household animals comprise frequently several dogs, occasionally a cat, and more often chickens. Other useful or pet animals and birds are scarce. The dogs, from nearly constant hunger, are efficient scavengers. Horses, cows, and sheep, if there are any, generally run at large, consequently no manure is present, in which insects, particularly flies, would otherwise breed near the houses.

OCCUPATIONS

A prime factor in the physical welfare of individuals as well as of groups of people is found in the prevalent occupations. The pursuits of the Indians in the Southwest and in northern Mexico, excepting those of the Yaqui and perhaps the Otomi, do not vary greatly. Agriculture, though in places restricted, is still the most important industry.[a] On account of the diminished supply of game, hunting (except among a few of the mountain tribes, as the Tarahumare, Huichol, and Cora) is of secondary importance; but fishing, carried on by interesting primitive methods, is more general (except among the Apache, Navaho, and Pueblos, who eat no fish), and on the whole yields greater returns. Native manufactures comprise the weaving of blankets, shirts, sashes, pouches, and hatbands, made mostly, though not entirely, by the women; hat making, chiefly the work of men, but occasionally, as among the Yaqui, of women; basket making, developed to the highest degree among the Pima, Hopi, Havasupai, Apache, and Walapai, entirely the work of women, and the making of pottery, which has reached a high state of development among most of the Pueblos in the north, almost wholly the work of women. In the south, as among the Otomi, pottery for sale is made largely by the men. Farm work is performed mainly by the men, although the women lend their aid.[b] The care of children, water and burden carrying, washing. cleaning, preparation of food (particularly the laborious corn grinding), dressing of skins, as well as, curiously enough, the construction and repair of dwellings, even of the stone houses in the pueblos, are chiefly the function of the women. In the heavier work in house building the men assist.

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[a] In many localities throughout the region under consideration the most desirable lands at present are owned and occupied, or exploited, by the whites, but the actual work is still performed by Indians, who are hired by the owners.

[b] They may even help to pull a primitive plow, as the writer has seen among the White Mountain Apache, but they do this of their own free will and to no excess.

All the Indians, where opportunity offers, keep a few cattle, horses, mules, burros, and sheep. The largest numbers of both horses and sheep are owned by the Navaho. Pigs are commonly disliked and are seldom seen. Beside chickens, a few turkeys are raised.

A few details with regard to Indian occupations may not be devoid of interest. Among the Southern Ute, originally a tribe of hunters, even with Government aid agriculture still receives but little attention. In consequence of this and of the decrease in the game supply, a portion of the people depend on Government rations. In 1902–3 these rations aggregated 25 per cent of the people's subsistence.

Since their segregation on reservations, the Apache have taken very kindly to agriculture. On the Fort Apache reservation the writer has seen men plowing, with garlands of leaves on their heads.

The Navaho are partly agriculturists, partly shepherds, but wherever an opportunity occurs they show good trading abilities and are readily adapting themselves to all work and handicrafts of the white man. The sheep are tended mostly by girls or women; the horses graze in definite places and are looked after mostly but not exclusively by the men.

The Pueblos in general are typical agriculturists and the women of most of the villages are good potters. The Papago, Pima, and Maricopa are agricultural peoples; the women, particularly among the Papago, make much basketry as well as pottery. The Mohave and the Yuma, especially the latter, seem to be somewhat less devoted to agriculture than the Pima or the Maricopa; they fish in the Colorado; they make no basketry and but little pottery, but adapt themselves readily to work among the whites. Numerous Mohave women make a little money by beadwork, which they sell at Needles, while a number of the men are employed in railroad work, and others find profit in boating on the river.

The Mexican Indians are chiefly agriculturists. With the exception of the Papago of Sonora and of some Pima, to whom may perhaps be added the Yaqui, none are fine basket makers or potters. The mountain tribes still do much hunting as well as fishing; the latter occupation is followed to a great extent also by some of the Nahua (Chapala), Tarasco (Patzquaro), Yaqui, and Mayo. The Yaqui is a jack-of-all-trades and the Otomi a beast of all burdens. Many of the Otomi are employed by Mexicans as laborers, especially in gathering the juice of the maguey and in the preparation of pulque. The

Mazahua still do much weaving and hat making.[a] The Tlahuiltec cultivate a little land of their own, but most of the men are employed as laborers in the cane fields and distilleries of the neighboring haciendas, while many of the women make tortillas and carry them daily for sale to Coautla, more than 4 miles distant. The occupation of the Opata and of most of the Mayo, Nahua, and Tarasco is practically confined to agriculture.

As burden carriers the Otomi men, and even the women, deserve special mention, for they have no equals in northern Mexico. They carry on their backs bulky and heavy loads for long distances. The method of carrying these burdens is always the same. A strap, or more often the bound ends of their *ayates*,[b] passes around the burden and over or above the forehead; this is usually the only form of attachment. The burden once lifted, often with difficulty, the Otomi walks steadily, with even and rather short steps, the trunk and head bent forward. While walking he may be weaving a hat strand, but more often supports himself on a short stick carried in one hand. A man will carry thus in two days a large load of pottery or of sombreros from one of the villages north of Tula to the City of Mexico, a journey of 40 or more miles. His only food on the road is a few tortillas or tortillas with beans, toasted over a fire, but he drinks pulque, if he can obtain it. He sleeps outdoors with one light and often ragged blanket as his sole protection. Sometimes the wife, burdened but slightly less than her husband, accompanies the latter on his journeys.

VI. FOOD

The principal article of diet among the Indians throughout the Southwest and Mexico is maize, which is eaten in the form of bread of various kinds, or as mush, or boiled entire. It is also parched on charcoal and eaten thus, or is ground into a fine meal, which, sweetened, constitutes the nourishing pinole of some of the tribes. Wheat is used in similar ways but less extensively. Next in importance to corn and wheat in the Indian diet are meat and fat and beans. Meat is scarce. Beef and mutton are generally preferred fresh, but are also cut in thin strips and preserved by drying in the sun, constituting the so-called "jerked meat." Fresh meat is prepared chiefly by roasting near a fire on one or more sticks; or it is cooked with corn or wheat, and occasionally other vegetables, in a stew. Fat and marrow are more liked and apparently better assimilated by Indians of all tribes than by the whites. None of the tribes visited eat under ordinary circumstances raw or even very rare meat, yet occasionally a portion of the liver, intestines, or some other internal organ of a freshly killed animal is consumed without being cooked.[a] All show a decided fondness for the small intestines of the larger animals killed for food. Sometimes these are not even well cleaned, but are considered to be ready for consumption after being roasted on hot coals. At Navaho Springs an example of this custom in a repulsive form was witnessed among the Southern Ute. The flesh of goats and sheep is not relished as much as venison or beef. Pork is rarely eaten, owing, perhaps, to Indian beliefs concerning swine, though the writer has been told a number of times by the natives that they dislike the taste of the meat. The flesh of horses, mules, and burros is eaten by some of the tribes of Sonora, particularly the Yaqui, and by the San Carlos Apache; mules, at least, are known to have been used as food by the Zuñi also. Dog flesh is eaten in only a few tribes, and but seldom. Of wild animals, besides the deer and the now rare mountain sheep, the Indians eat the squirrel, the prairie dog, and particularly the fat field mouse. As to other quadrupeds, customs vary with the tribes, some eating animals which others, from traditional or religious motives, tabu, such as the skunk, badger, and beaver. The Indians consume also some poultry and eggs, and the common game birds which they hunt or trap. All the Mexican and the Colorado River Indians like fish and crawfish; but these, together with all other aquatic animals, are avoided by the Zuñi and other Pueblos, also by the Apache, and the Navaho.[b]

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[a] An exhibit of the material, including specimens of Indian work, collected by the writer, may be seen in the American Museum of Natural History.

[b] A light but strong net woven from the fiber of a certain maguey (ixtle).

Beans of many varieties are a more important article of diet, especially to the Mexican Indians, than meat. They are much easier to procure and combine large nutritive value with palatability. They are generally cooked with a little fat into a sort of stew; this is eaten with the tortilla, which serves as a spoon.

Other important articles of the Indian diet are squashes, melons, sugar cane in the hot valleys of Mexico, and wild and cultivated fruit of many varieties, as well as piñons and other nuts, and some mushrooms. Potatoes are seen but seldom. Chile is plentiful and much liked, especially in Mexico. Little native tomatoes are eaten, mostly as a relish. The tribes in the Southwest raise large quantities of peaches, which they consume either fresh or dried. They also gather many wild plums, as at Taos, among the Tarahumare, Cora, and other tribes. Among the natives of northwestern Mexico and southern Arizona the place of the peach is taken mainly by the very digestible and nourishing fig-like pitahaya and various other fruits of the cactus. This region produces also many other wild fruits, including berries.[a] Numerous fruits are used, crushed in water, as drinks. All the Indian tribes eat greens, bulbs, and roots of many varieties. The Mexican Indians eat the tender leaves of the cactus; and among the tribes who still live in a more primitive fashion many kinds of native seeds serve as food. The pod of the mesquite, the screw bean, and the mescal[b] are additional important articles of diet. Bread of the mesquite bean is used, especially by the Mohave and the Yuma, and it is found also in several forms in Mexico. The acorn is eaten only sparingly.

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[a] Among the Seri, according to McGee, the habit of eating raw flesh is common. See The Seri Indians, *Seventeenth Annual Report of the Bureau of American Ethnology.*

[b] The reason usually given for this prejudice is that such animals "do not taste good,' but the real cause must undoubtedly be sought in the now largely forgotten cosmogonic and religious views of these tribes. Some of the San Carlos men said the taste of fish to them was such as to make them vomit; they did not like even to think of it. One of the men gave a more graphic explanation; he said "the fish is a very peculiar animal; he has scales like a snake, wings like a bird, and swims in water," incongruities which to the Apache mind suggest grave doubts as to its suitability for food. A White Mountain Apache said the people are afraid of eating fish for fear that they would get sick and perhaps die; beavers are not killed and eaten because then "the rivers would dry up."

Milk is either disliked or is used but little, and of their own initiative the Indians make neither cheese nor butter. Coffee, on the other hand, has come much in vogue among the tribes of the Southwest. It is used black and sweetened, and is often drunk to excess; in course of time the "coffee habit" will probably produce evil consequences. Often this beverage is taken as a substitute for more substantial diet. There is no knowledge of danger in the use of coffee, which is given without stint to individuals of all ages, occasionally even to young infants.

Among most of the tribes, particularly those not restricted to reservation life, the quantity of food available varies very much at different periods of the year. No Indian raises much, even if good land can be had; consequently only in rare cases, as among the Pueblos, do the natives have much left to eat, or even for seed, at the end of the year. After even an ordinary harvest for a time food is everywhere abundant. Among some of the Indians, particularly the Tarahumare and other Mexican tribes, frequent feasts are held at this season, at which much of the food supply is consumed. If the harvest is abundant, the store of corn may last until the next crops are gathered, but, as before stated, this is seldom the case. Consequently it happens that in springtime the Indians not infrequently suffer from want. If the season is poor and the demand for their labor by the whites is slight, the suffering may be severe. Under these conditions the Indians use as food many articles unknown or repulsive to the white man. A peculiar feature is the universal and often detrimental eating of unripe fruit, especially unripe melons. It may be observed in all tribes and particularly among the young. The mothers give such fruit freely to the smallest children, even though other food may be plentiful.

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[a] The fruits are widely known by the same names. They include among others platanos, naranjas, ciruelas, wamuchil, nanche, manzana, membrillo, chirimoya, wayava, zapote, copalcojote, tejocote, and lapulin. For references see Bibliography.

[b] Made probably from several species (as yet undetermined) of agave.

Tribal details.—There were until recently perhaps greater irregularities in food among the Southern Ute, particularly the Wiminuche, than among any other tribes of the Southwest. For a short time after the distribution of the biweekly ration or after a successful hunt food was consumed in excess; then followed want and often actual hunger until the next food supply became available. Until lately the people were averse to farming, and not many vegetables or fruits could be gathered from the surrounding semibarren country, though it affords some edible roots. The conditions here outlined must have had, of course, an unfavorable effect on the constitutions of these Indians.

The Apache, though poor, are now seldom, and then only to the extent of certain individuals, reduced so that they suffer from hunger. Those of White Mountain, Arizona, and those of San Carlos still know numerous plants and fruits with which they could eke out an existence in times of necessity (see Appendix), but which now, under ordinary circumstances, they use but little.

The San Carlos Apache, one of the tribes among whom the subject of food was given especial attention, depend chiefly on meat and wheat. From wheat flour and baking powder they make large, thin tortillas, 10 to 12 inches in diameter, such as are met with in Sonora. These they toast for a few moments on a tin heated over coals and then eat them warm. Another bread, said to have been in general use before wheat came into vogue, is made by mixing corn meal and water and baking the batter. These Apache plant but little corn and most of it serves for the preparation of tesvino.

The meals in this tribe are seldom much varied or very abundant. In numerous instances the people have at midday simply tortillas and black coffee, sometimes with the addition of canned fruit or jam. For a short time subsequent to ration days (for the aged only), or after the killing of beef, meat is boiled for the midday and evening meals, into a kind of stew. The evening meal is usually the most substantial. At the San Carlos school the articles of diet most preferred by the children were, first, beans; second, sirup and bread; third, meat; and, fourth, coffee. None of the children are immoderate eaters. As good and well prepared as the school diet is, however, the homemade articles are always a delicacy to the children—much as in our asylums.

The Mescaleros live quite irregularly and are becoming more and more dependent on the grocer. They hunt to some extent; even when not in great want, they eat occasionally the fresh, sweetish inner bark of the pine. This is pounded to a pulp, which is baked in the form of cakes.

The Jicarillas live much as do the Mescaleros; they also use the inner bark of the pine for food. They still tabu fish and fowl, but no longer show any objection to milk, or at least not to milk in condensed form.

The Walapai eat no lizards or snakes, nor do they eat dogs or coyotes, but they like the flesh of the badger. They eat also the hawk but not the eagle. Field mice are "good." This tribe does not eat fish, saying that they smell bad, but there is, as with the Apache and some Pueblos, a mythical background for this peculiarity. Regarding beaver, the Walapai say they never had any; should they get one, they thought it very likely they would eat it. They eat the fox and even the wild cat, but naturally these articles of diet are scarce. They used to eat horse flesh, but do so no more. Only a few of the Walapai drink milk. They do not care much for mutton or goats' flesh, and have never eaten the flesh of the burro or the mule. They use no tree bark for food. In winter venison is an important feature of their diet.

During the writer's visit in the winter camp of the Havasupai the people had some fresh meat of deer and antelopes. They were well supplied with dried peaches and various seeds, which, after the manner of the Walapai, they usually prepared and ate in the form of mush.

The Navaho, besides tabuing fish, avoid eating bacon. The latter was given them during the captivity of a portion of the tribe at the Bosque Redondo, and as many died at that time the bacon was suspected of being the cause.

The Hopi and the Zuñi make a peculiar corn bread (*piki* in Hopi, *hewe* in Zuñi) by baking in a thin layer on a hot stone a liquid dough composed of well-ground corn and water. They consume many melons and fresh or dried peaches. At festivities they make cornmeal tamales. In common with all the other Indians of the Southwest, they have acquired the habit of using flour and baking powder, as well as canned fruit, and of drinking at their meals considerable quantities of weak, sweetened, warm, black coffee. They also hunt rabbits for food. Meat in general is very scarce.

The Zuñi and the Rio Grande Pueblos, besides preparing corn food in many other ways according to their old usages (see the writings of Cushing and Mrs. Stevenson), make corn bread and wheat bread, and tortillas, as well as other dishes, in the Spanish fashion; apart from this they live much like other Southwestern Indians. The Zuñi engage more in hunting than any of the other Pueblos.

The Isletas raise considerable fruit, including grapes.

The Papago, besides planting corn, wheat, beans, and other things, and making use of native fruits (as saguaro, yucca fruit, and tuñas), mescal, and mesquite and screw beans, eat also various greens and seeds. Those living farther from the white settlements naturally depend on native foods to a greater extent, especially when the cereals become exhausted. They sell dried yucca fruit to the Pima. Like the Pima, they make pinole from parched wheat.

The Pima are great wheat growers. Occupying a very fertile valley, when the water supply is sufficient their crops leave but little in the way of food to be supplied; nevertheless, they are acquainted with, and use on occasions, many of the native edible fruits, greens, and roots (see Appendix). Formerly the Pima successfully hunted the deer. They also ate a certain kind of lizard, and rats likewise were included among their edibles. They never had an aversion to fish, clams (which formerly abounded in the Gila), or any other aquatic animal, and the younger members of the tribe have no objection to pork, poultry, eggs, and milk. They do not eat dogs, cranes, fish-hawks, eagles, buzzards, crows, or snakes. Pork, although eaten, is not sought for, and but few pigs are kept.

The Pima school children show a preference for beans, sirup, meat, and bread, in the order here given. They care but little for oatmeal and rice. None of them are immoderate eaters.

The Mohave live largely on the products of the soil. They eat dogs ("dogs best meat"), however; also game and meat of all kinds, and on occasions badgers, lizards of one species, and even coyotes. An important article of their diet is bread made from the mesquite beans, and they utilize the screw bean also for food. There is a species of root that only the "braves" are permitted to eat. Allen[a] reports that "they will not eat the meat of the beaver, claiming that if they do their necks will swell;" but they have no aversion to fish or any other aquatic animal as food.

The Yuma along the Colorado raise a limited amount of corn, wheat, and beans, and many melons and squashes, and utilize, in large quantities, the mesquite beans, from which they make mush, or bread. They help to sustain themselves by fishing.

The Opata, Yaqui, Mayo, and Tepehuane live almost wholly on the products of agriculture, though they also keep some poultry and cattle, and gather wild fruits, including an abundant supply of pitahaya and tuña.[b] At a certain time of the year the Opata fish in the rivers for a species of minnow which they eat. The Yaqui eat the flesh of the burro and the horse. The Yaqui and the Mayo living near the sea do considerable fishing.

The Tarahumare, under the pressure of frequent needs, have learned to eat animal and vegetal substances of great diversity. They raise some potatoes, chile, and sugar cane. The flowers of the squashes are dried and kept, and from them is made a kind of porridge. Meat, particularly venison, is much relished among this tribe. They also like the flesh of field mice, which they skin and roast suspended on sticks near the fire. They occasionally eat various small animals, including skunks, lizards, locusts, grasshoppers, frogs, water beetles, and even larvæ.[a] From corn they prepare tortillas, also round cakes, each about three-fourths of an inch thick, called "moon bread." Occasionally they make Mexican-like bread from wheat flour. They eat the blood of animals after preparing it over the fire. Their meat is sometimes eaten almost raw, but usually it is well roasted or otherwise cooked. The Tarahumare living near streams dive into pools and lance fish; they also shoot fish with arrows armed at the point with a number of nopal spines, catch them with nets, or drag for them with blankets. At times they drain the lagoons and kill the fish with stones; and they also have recourse to poisoning fish with certain plants. Crawfish, too, are caught and eaten. The domestic animals kept by the Tarahumare are chickens, cattle, sheep, and some goats; they have also a few turkeys, but no ducks or geese. Besides the domestic fowls they eat various wild birds, and eggs of both classes. Wild fruits are abundant in season.

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[a] G. A. Allen, Manners and Customs of the Mohaves, *Report of the Smithsonian Institution for 1890*, 615, Washington, 1891.

[b] For native Mexican fruits see Rose (Bibliography).

The Huichol plant maize, beans, melons, and chile, and gather wild fruit of many varieties. Various edible roots are also included in their dietary. They hunt chiefly the deer and the squirrel. Those near streams gather crawfish, which they impale on sticks and broil. They trap fish, which are spitted on sticks and roasted, usually over night, near a slow fire. Some of the Huichol own good cattle. Though quite as primitive as the Tarahumare, these people, according to general report, suffer actual want but seldom.

The Cora are very adept in making fine seedless, or almost seedless, "tamales" from the fruit of the pitahaya, which grows in great abundance in the canyon of the Rio Jesus Maria and neighboring barrancas.[b] Platanos, red and yellow, ciruelas, and other native fruits are eaten in considerable quantities, and fruit is also brought from the coast by traders. The Cora also raise crops of corn. They are good hunters, accustomed to using the rifle. The Rio Jesus Maria affords them edible fish, particularly a kind of catfish known as

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[a] "They eat almost anything that lives—polecats, mice, rats, snakes, the big tree lizards or iguanas, frogs, fish spawn, grasshoppers, and certain kinds of larvæ, even those of the dragon flies taken out of the water."—Hartman. See also Lumholtz, Unknown Mexico.

[b] The nutritious fruit is gathered in large quantities by means of long poles on the ends of which four little sticks are so arranged as to form a small receptacle. The pitahayas are carefully torn from the limbs of the cactus, laid on the ground, deprived of spines with the help of little branches, and brought home in baskets. The women remove the skins, and the luscious inside fruit is then slowly boiled. While boiling most of the very numerous small black seeds are removed. When cooked the mass is spread on stones to cool, finally assuming about the consistency of the inside of a ripe fig. It is then divided into portions of from about 3 to 4 ounces each, which are wrapped in clean corn husks. In this form the "pitahaya tamales" are preserved for consumption. With care they will last for several months, or even for a whole year. The writer has brought a quantity of them to New York without appreciable loss of their delicious flavor

"bagre." The more eastern Cora do not eat the squirrel. Some of those of Jesus Maria make cheese, after the manner of the Mexicans. Poultry and eggs are quite plentiful in some of the villages. When a deer is killed and can not be consumed fresh the carcass is placed in a large hole in the ground, which has first been thoroughly heated, and then covered with grass and branches; the meat thus becomes slowly and thoroughly baked. The Huichol cut such meat into small pieces which are strung on cords and dried and afterward hung inside the hut until needed.

A very large proportion of the food of the Otomi consists of tortillas, beans, and chile. As is the case with all the tribes living in the maguey region, they regard pulque as food, and apparently this liquid has some nutritious value. On the public road a little beyond Fajayucan the writer came across an Otomi family engaged in roasting and selling pigs' ears, snouts, and other articles of diet, with pulque, to the passers-by; yet pigs are rarely seen in the typical Otomi settlements. Tuña is very common, pitahaya scarce. In many districts the food of the people is much like that of the poorer Mexicans in the same localities.

The Tlahuiltec, though living for centuries near the whites, still avoid milk, and no hogs are seen in their village. Maize, melons, squashes, cane, and various fruits, eggs, and beef, with an occasional chicken, are the principal articles of diet.

(For further data concerning foods see Appendix.)

VII. ALCOHOLIC DRINKS

The alcoholic drinks peculiar to the Indians of the Southwest and of northern Mexico are mainly produced by fermentation of corn, mescal, and maguey. The corn liquor is usually known as tesvino (also as tesvin, tizwin, or tulipi); it is ordinarily (with fermentation not carried to the extreme, and in the absence of vegetal excitants, narcotics, or other liquor) a weak alcoholic beverage with a slight nutritive value, and is not a strong intoxicant. The mescal plants, comprising several species of agave, give colorless liquors known as mescal and tequila; the first is often spoken of simply as vino. Another liquor, called sotol, is made from the dasylirion (Rose). These are all distilled beverages and are usually ardent and strongly alcoholic, particularly the tequila. The common maguey, or century plant, yields the well-known pulque,[a] a milky, sourish beer, the alcoholic percentage of which depends on the duration of fermentation. The knowledge and use of tesvino and mescal extend into Arizona, pulque and the maguey liquors being made only in the more southerly part of the region here considered. Besides the above some of the Indians occasionally prepare fermented liquor from the pitahaya, from mesquite beans (Mexico), from native grapes, and from other fruits, or from honey. The whites have introduced whisky into the north, and the impure and intoxicating sugar-cane rum, locally known as aguardiente, among the southern tribes.

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[a] Agaves yielding juice from which pulque is made are of several species, the most common being A. atrovirens.

The Ute, Navaho, and most of the Pueblos, Walapai, Havasupai, and Mohave have at present no native alcoholic beverage. The Isleta make some grape wine.

The White Mountain, San Carlos, Chiricahua, and Mescalero Apache make tulipi or tesvino,[a] to which are generally added as "medicine," to augment the effects of the drink, small quantities of several roots of native plants.

The writer took special pains to ascertain the "medicines" added by the San Carlos Apache to the tesvino and the reasons for their use. The number proved large beyond expectation, but the results of the inquiry why each particular substance was employed were rather disappointing; the openly avowed purpose of the majority was to "make more drunk." The individual articles and reasons for their use are as follows:

I-zē lu-ku-hi ("crazy medicine": Lotus wrightii); the part used is the root; they say, it "makes us more drunk."

Chil-ga-le ("make noise": Cassia couesii); part used, the root; "makes the tulipi stronger."

I-zel-chih, a plant that was not identified, is also occasionally added to the tulipi to make it stronger and more intoxicating.

I-ze-du-ghu-zhe ("medicine sticks"); root occasionally added to the tulipi to make it "taste more bitter—stronger."

Sas-chil-tlah i-zē, sas-chil (Canotia holocantha); a plant with a root of aromatic taste, that is often added to the tulipi "only to make it taste better;" the root is chewed occasionally "just like candy." The seeds of the plant, after being roasted, are also used for the same purpose.

Ga-chuh pi-tla-hi-ya-he ("under-it-the-jack-rabbit-makes-his-bed"); root occasionally added to the tulipi "to make it stronger." The same is true of the roots of *me-tci-da-il-tco* (Perezia wrightii), and *thli-he-da-i-ga-si* ("horse-eats-it").[b]

Besides the above, the San Carlos Apache occasionally put into the tulipi some of the inner bark of the mesquite, which "just makes the drink taste sweeter and better, so we like to drink more of it."

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[a] See author's Method of Preparing Tesvino among the White River Apache, *American Anthropologist*, n. s., VI, Jan.-Mar., 1904, 190-191. The Mescaleros are reported by their agent to have made no tesvino since October, 1897 (*Report of the Commissioner of Indian Affairs*, 1900, 291). The San Carlos, Tonto, and Coyotero Apache continue to make the beverage. Some among them have recently commenced to mix it with whisky.

[b] The collected samples of some of these plants were not in condition to permit identification.

Among the White Mountain (Arizona) Apache an occasional addition to the tulipi consists of the root of Datura metaloides.

The only native drink besides tulipi which the San Carlos Apache make is the pitahaya wine. When the fruit is plentiful quantities of it are put into large jars. The pressure of the soft fruit causes an abundant supply of the juice to trickle out; this is poured off and allowed to ferment.

The Mescaleros used to make an intoxicating drink from the inner bark of the pine or mixed this with the tulipi.

The only native alcoholic drinks among the Papago are the sawado, saguaro, or haren, made by fermenting the molasses of the pitahaya-like fruit of the saguaro, and mescal. The haren takes two days to make, and it lasts in good condition one day and one night. The first day it is not very intoxicating and is said to leave few or no bad effects; after that it grows more alcoholic, and its effects are more unpleasant. To make it strong without so much of the bad taste the Indians cover with blankets the jar in which it ferments. The Papago make mescal and they also get mescal and sotol from Mexico. A sort of tesvino is made by these people in the following manner: They grind fine some dry corn, mix it with water, and then strain the mixture and let it stand until it is partially fermented. The liquor tastes bitter and is too weak to make them drunk.

The only native alcoholic drink still prepared occasionally by the Pima and the Maricopa is a wine from the fruit of the saguaro.

In 1890 Dr. W. E. Ferrebee, a special agent to the Indians, reported that "a very acceptable beverage, called pissioina, was prepared by the Yuma by roasting wheat grains over a charcoal fire until they assumed a light-brown color, after which they were pulverized, dissolved in water, and allowed to ferment before drinking."[a]

The Opata, who used to make liquor of several kinds from corn, native grapes, and a number of the cacti, still occasionally prepare corn tesvino.

The corn tesvino is the principal drink of the Tarahumare. It is essential on all festive occasions. They make also sotol and mescal from the agaves.

The chief intoxicant of the Tepehuane is the vino, or mescal. It is generally used only on special occasions.[b] The Tepecano and the Huichol drink sotol and probably other agave beverages.

The drink of the Otomi and Mazahua is pulque. The Tarasco of the Zamora district and of Tarequato use only liquors which can be bought at the Mexican stores, the principal of which is aguardiente (sugar-cane rum). The Tlahuiltec use this exclusively.

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[a] Report on Indians, *Eleventh Census*, 1890, 220, Washington, 1894.

[b] The drink is mostly bought from peddlers and is used to excess, if the supply allows, at the feasts. The drink thus obtained is generally of poor quality and soon affects those who partake of it.

In their effects upon the Indian the beverages most deleterious are, in the order named, the aguardiente, impure sotol, tesvino mixed with drugs or whisky, and pulque; this last, however, only because it is used in great quantities.

VIII. GENERAL HABITS OF LIFE, CHARACTER, AND SOCIAL CONDITION

There are numerous minor points in which the mode of life of the Indian differs from that of the white man; only those, however, will be touched on here which concern most nearly the functions and health of the former.

The usual time of rising for the Indian family in warm weather is dawn, but delays are common enough. During the earlier part of the day, if the weather is favorable, the members remain much outdoors. After midday the adults occasionally take a siesta. Except in time of ceremony or feast or game the family generally retire before or by 9 p. m. They lie on mats, skins, or blankets spread on the ground or on benches, each person folding a piece of clothing under his head and wrapping himself entirely in a blanket. On cold nights not only is everything closed and the family sleep huddled together, but the writer also heard from the Indians that in some cases dogs are taken to sleep with the people, who benefit by the warmth of the animals. After rising the men often depart for work at once, while the wives attend to their children, bring water, and slowly prepare for the first meal.

But little time is given to personal cleanliness. If water be plentiful, each of the adults and of the older children may throw a few handfuls on his face and wet his hair a little, leaving all to dry without wiping. The children are washed but seldom.

The meal hours of the more primitive Indians differ somewhat from those of white people. The most regular and important meal is that taken after sunset or later, at which time the quantity of food consumed is occasionally greater than that to which an average white man is accustomed. Earlier in the day there are one or, more rarely, two other meals. If the nonreservation Indian has a breakfast it is usually somewhat late, and often there is no lunch; or there may be no actual breakfast but a meal of some sort about midday. Among the Pueblos and others who are partially civilized meals are more regular and in point of time accord more closely with our own. The Indians employed by the writer became easily accustomed to three regular meals a day, and also took quite kindly to our diet, with the exception of canned meats and occasionally also canned milk.

The unspoiled Indian of our Southwest and of northern Mexico is not lazy; he may rather be termed industrious. Both men and women, from adolescence, and even earlier, to old age, do considerable work, though they seldom hurry, nor do they care to work for long stretches at a time. Indolence is, however, quite prevalent among the more or less degraded Indians.

The love of outdoor life and of outdoor sports, especially hunting, horse and foot races, and various games, is general. Football and baseball are much favored among the younger element of the tribes north of Mexico, and the Indian school children, when occasion permits, devote a very large portion of their spare hours to outdoor play and games.

Among the adults spare time is spent in attention to the hair, preparing materials for pottery or basketry, fixing various utensils, and in making fancy or ceremonial objects, or arrows, dolls, and numerous other things. Visits are mostly indulged in during the evening. When water is near at hand, the women and children find much pleasure in bathing. The men also bathe, and in some localities (for example, along the Gila) learn to swim well. A more frequent bath with the men in the more northern tribes is the sudatory, but the motive of this is not ordinary cleanliness, it being considered purificative in a much broader sense, and also curative.

Kissing, among adults as well as children, is not in vogue among any of the Indians who were visited. It is practically never seen except among those who are educated, and very seldom even among them.

Visiting or visited, and even during a casual meeting and conversation, and at ceremonies of every nature, the Indian engages in smoking, which he does but seldom on other occasions. In most of the tribes the usual smoke is a cigarette made of rather little tobacco and much corn husk, but the Cora prefer a small clay pipe. Women and even children smoke, though less than the men. On the whole the consumption of tobacco among all the Indians visited is very moderate; certainly less than among whites.

Among the more indolent, or when a part of a tribe visits another, there is much gambling, mostly with marked sticks, or with cards. This is frequently carried on in an atmosphere vitiated by the presence of many persons, and is occasionally kept up day and night until one party lose all they have to wager. Some of the women gamble also, even by themselves, one result being not seldom the neglect of their children.

In disposition, which has much bearing on the mode of life of a people, the Indians of the entire region visited are generally cheerful and contented. They are very conservative. Their passions, except perhaps that for gambling, are moderate, their wants few, and prolonged worry is almost unknown to them. There is a general willingness rather than an inclination to drink, due to a lack of knowledge of the danger. Occasionally this leads to excesses, from which may develop a real tendency to alcoholism. With this exception there is seldom seen anything in the mental status of these natives that could act adversely on their constitutions. Under the effects of drink, or through death in the family, or by humiliation, individuals will become temporarily gloomy and despondent, and may even commit crime or suicide; but prolonged grief is apparently of rare occurrence.

The most striking and far-reaching characteristic of all the Indians visited, even from the medical standpoint, is their improvidence and seemingly a decided inability to take advantage of some of the lessons of experience. This keeps them disarmed against all accidents and diseases.

The moral status of the tribes, which, of course, affects directly their well-being, differs widely. It is good in the most independent tribes, also in the majority of those on reservations; it is very bad among several of the smaller reservation tribes who are in closer contact with whites, and among some of the semicivilized Mexican Indians.

The few details following, which concern individual tribes, will aid in forming a better estimate of the Indians in these particulars.

Until recently, when some improvement became apparent, the whole life of the Southern Ute showed a transitional degradation. He has ceased, of necessity, to be a hunter and free rover as he was formerly, and is slowly and unwillingly adopting new habits in place of the old. Among the men there are much indolence and a general lack of industry. The women show better traits, but even they are little inclined to work or even to practise ordinary cleanliness, and often neglect their households and children for gambling. The writer has repeatedly seen Ute women at Ignacio spending half a day or more at cards, while their little ones were left at home without any care except such as the older could give to the younger, and sometimes without food. Older children must largely shift for themselves. Aged people are neglected by their children and must provide for themselves or suffer; they do not seem to expect anything different, and in turn show but little affection for their progeny. The people are indecent in speech, and probably low in sexual morality.[a]

The Apache are everywhere proving themselves good workers, and on the whole are more rapidly adopting the habits of whites than are many other tribes. At San Carlos there have been within the last few years much drunkenness and consequent disorder due to permission to make tesvino and to surreptitious introduction of liquor by whites. The sexual morality of the Indians around Fort Apache and San Carlos is not of a high grade; it has been injuriously affected by their contact with white men of the lower order. As with other Indians, the habits of individuals differ according to the degree and character of their contact with whites, being, in general, worst where the contact with the bad element of whites is the closest. Drunkenness has been stopped among the Mescaleros; and on the Jicarilla reservation drunkenness or dissolute conduct occurs very seldom.

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[a] Sanitary conditions were found especially bad among the Wiminuche—in a disgusting degree during the meat-ration days.

The sweat baths among the San Carlos Apache are taken in the following manner: Usually three or four men take the sweat bath together. They construct a small hut in a suitable place near the river and cover it with sheets and blankets. There is but a small entrance, and over this also hangs a blanket. A fire is made about some stones, outside the hut. Inside is placed a dish of water. When the stones have been well heated the men, having in the meantime undressed, bring them into the hut, close the entrance, sprinkle water over them, and continue to do so until enough steam has been generated to produce thorough sweating. When this has been satisfactorily accomplished the men run out and take a plunge into the water of the river. They then drink as much of the cold water as they can until vomiting is induced. They believe the cold water in the heated body causes the vomiting. This finishes their purification. Those of the younger generation take but few such baths; "they can not stand it like the old timers." Moreover, the ceremonies for which such a preliminary purification was deemed necessary, as well as the native medicine-men who occasionally ordered such baths, are continually growing fewer. In warm weather both men and women bathe frequently in the river, and many are good swimmers. The women also bring their children to these baths.

Among all branches of the Apache, including the Lipan, the bed is generally made from a layer of cedar, pine, or other boughs, or leaves, straw, or hay, with blankets and quilts and occasionally a mattress upon it. The boughs or leaves are changed when they become dry or soiled, as well as after an illness.

Among all the Apache, as in other tribes, women ride horseback astride, sometimes without saddles (though usually on a folded cloth or blanket) or stirrups. The men often ride without saddles.

The San Carlos women cut most of the wood (mesquite) needed in the household, wielding without discomfort the regular large woodman's ax; the men, however, cut most of the heavier wood for sale.

The dwellings are not kept very clean. Remnants of food are often left on the ground, around the fire, and the same is true with regard to nasal and throat discharges. Most of the food particles, however, are picked up by the dogs.

The Walapai, an approachable and common-sense people, show habits closely resembling those of the Apache. In recent years they were reduced to a state bordering on pauperism, but an improvement has set in. Their farming lands are rather poor and work other than agriculture is being followed. Much hunting is still done every winter. The idle men gamble much, while some of the women, neglecting their households, spend time begging, or selling the few baskets which they make, along the railroad. The recent manner of life of the tribe explains their gradual diminution in numbers.

The Navaho, as well as a portion of the Papago, owing to the semidesert nature of the country they inhabit, live a rather roaming life, but they are by no means nomads. They spend more time on horseback than the Indians of any other tribe, often riding long distances without saddles. They herd flocks of sheep, own many ponies, and are great horse fanciers and racers. Both men and women gamble, but they are not so reckless of property as members of other tribes. There is but little prostitution or drunkenness in the tribe, and, with the exception of gambling, the general moral tone of this spirited, able, and shrewd people is a good one. Individuals of both sexes, as among the better preserved Indians in general, are very modest. Both of the sexes show, as a rule, much care to seclude themselves when attending to their necessities. The women, when about to mount their horses, usually place the animals so as to avoid possible exposure of the limbs in the sight of anyone. In the writer's visits to their homes, in measuring and examinations, and in connection with inquiries, there was never manifested anything indecent or forward. During his stay about the Chaco canyon, only one Navaho woman who could be termed a prostitute was heard of, and very few individuals were seen in the tribe who could possibly have been half-breeds. About some of the trading posts and south of the reservations the conditions are worse than in the heart of the country, but the degradation seen is nowhere great and is scarcely more than individual; it nowhere involves large groups of the people.

The Pueblos are, on the whole, less active, although not less industrious, than the Navaho. An interesting fact, apparent during the writer's stay with the Hopi and later with other Pueblos, as well as other Indians, was that the middle-aged and older men and women worked more than the younger ones. The older Hopi women are employed in the difficult work of carrying water from the springs to the summits of the mesas, which are 600 to 700 feet high. All the Pueblos, as is well known, are orderly and quite moral, though perhaps not very progressive people. The Zuñi and the Taos are rather more spirited than the Hopi, Acoma, Laguna, and others. The mental capacity of all these people for what applies to their religious and ceremonial life is truly astonishing and greater than in other directions.

The Hopi bathe or wash very little—a condition that is largely due to the great scarcity of water on their high mesas, as well as about them. Even sweat baths are not in vogue. When the field matron at the base of the First mesa provided the means, Hopi women came to bathe themselves as well as their children.

The Zuñi and most of the Rio Grande Pueblos are, in general, somewhat cleaner than the Hopi. Some of the Zuñi dwellings are spacious and neat, fully equal to habitations of the best class among the poorer Mexicans; only a few, however, can be effectually heated in cold weather.

The Pima are rather timid, but of good habits; the younger generation has already adopted in a large degree the ways of whites.

The Mohave about Needles are in a partially degraded condition, somewhat similar to that of the Walapai. They are as yet rather nonprogressive, though quite apt and manageable.

The Colorado River Yuma, although capable and intelligent, live also in partial degradation. They do not plant much and rather shun work, the men especially. They spend much time in gambling and playing with the pole-and-ring,[a] or, dressed in all the finery they can get and with painted faces, they lounge and strut about Yuma. When the annual river overflow, upon which their crops depend, fails, as occasionally happens, there is much poverty. The women in general have a bad reputation for morality. Curiously, there is but little drunkenness. It has been prohibited for several years by a chief of the tribe under pain of corporal punishment for disobedience, and the prohibition is kept in force to this day, though its originator is said to be dead.

With regard to the Sonora Indians, the reader is referred for particulars to the author's former contribution.[b] The Opata, Yaqui, Pima, and Mayo are half civilized, and their habits, vices included, except in distant settlements, approach closely those of the ordinary Mexicans. The strong-minded Yaqui are especially capable and good workers, as well as good fighters.

The Tarahumare, in Chihuahua, are one of the most primitive tribes in existence. They are not especially spirited or progressive, or noted for any exceptional mental traits. They approach in their disposition and general character the Pueblos, but are less provident. The men are, nevertheless, very good at trailing and hunting, and are enduring walkers, runners, and carriers. Foot races are in great favor among the younger men, and sometimes they are participated in even by the women. There are many ceremonial dances, which usually last the greater part of the night, at which is manifested unusual physical endurance by both sexes.

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[a] John Townsend, one of the more prosperous Indians, made, in 1902, a regular gambling place of his house. At some distance in front of the house was a space for the pole-and-ring game, while the house itself was reserved for card parties. Visitors paid the host 8 to 10 cents in the daytime and 20 cents at night. In return the host provided for all coffee, meat, bread, and tobacco, also the cards and other implements of play. When a man lost a horse at the pole-and-ring game, in addition to his loss he had to pay the host $1, this fine being regarded perhaps as a restraining punishment.

[b] Notes on the Indians of Sonora, Mexico, *American Anthropologist*, n. s., VI, no. 1, Jan.–Mar., 1904.

The life of the Tepehuane, in Durango, appeared to the writer simple and quite regular. The people were partially civilized by the priests, and, living mostly at several days' distance from whites, they had to a large extent escaped degradation. In character the Tepehuane now are rather timorous, suspicious, averse to all innovations, and very deliberative. While there are men as well as women among them who are bright, or inspire respect, the majority impress one as having no special aptitude. Their village life and feasts, and their sedentary, agricultural habits remind one even more than do the Tarahumare, of the Pueblos.

The Tepecano, Huichol, and Cora are still practically self-governing tribes, and, like the Tarahumare in the north, these people, particularly the Huichol, preserve many primitive habits of life. The Huichol have the reputation among the Mexicans of being rather treacherous and dangerous, but such an opinion must be taken with caution. They are afraid of whites, and are in general of a timid disposition. While it is true that they have killed a few Mexicans, the provocation, judging from what could be observed of the treatment accorded them by some whites, must have been great. Like all Indians, they are averse to miners and prospectors, fearing for their native land; yet the utmost harm to a prospector that could be verified was the filling with stones in his absence of the hole he was working in. The people are much involved in their cult; they are very artistic in their apparel, embroidery, ceremonial objects, and in other respects; they are apt and devoted players on their little homemade violins, and manifest in numerous ways appreciation of the beautiful in nature and art. They are also skillful hunters and fishermen. When excited by drink, they fight among themselves; laying down their machetes and other things, they catch one another by the hair and grapple roughly.

The Cora, somewhat more civilized than the Huichol, are of a rather cheerful disposition and more open and aggressive. They fought well on more than one occasion in the past against the Mexicans and even yet have not given up the thought of armed resistance.

The Otomi are very ignorant, superstitious, and bigoted, the most so where they live near the "Vecinos" (i. e., Mexicans). The moral tone of the people and family life are, except in the purest-blood settlements—where the Indians are in general superior—of a low order; drunkenness is very common; clandestine mixture with the lower class of Mexicans is quite prevalent.

The Tarasco and the Mazahua retain more of their primitive customs than the Otomi, nevertheless their mode of life has been much modified by the influence of the whites. They are in general less degraded than the Otomi, but nearer the Mexican settlements and in the larger villages drunkenness among them is frequent.

The Tlahuiltec are very unapproachable, superstitious, and much addicted to drunkenness. While they cling to their ancient style of habitations, costume, and language, their mode of life has lost to a great extent its primitive nature.

The change from old to modern views and habits, particularly to such as have a bearing on the physical well-being of the Indian, is everywhere slow and tedious.

IX. PHYSIOLOGY

The foregoing chapters have touched on the ordinary conditions of life and such of the characteristics of the people of southwestern United States and northern Mexico as are presumably capable of influencing their physiological functions and health.

Environment has undoubtedly modified the habits of the Indian, but it is a question whether these habits and the effects of environment, so far as not overcome by adaptation, have been powerful enough permanently to change any of the functions of his body established through ages. The answer is difficult, for there is no certainty as to the character of the environment in which the Indian originally developed and no knowledge as to the nature of his functions when he settled where he is at the present day. Seeking for analogies it is found that numerous whites live in similar climates and that their habits also have been modified by the environment, but thus far without any known important functional modifications.

From the foregoing considerations it seems that there is nothing in the present conditions of life among the Indians in question on the basis of which important physiological differences between them and whites could be expected. There are few prolonged extremes in climate that are not well provided against; there are no protracted periods of undergrade or of high-grade nourishment, or of very exceptional foods; and there is no continuous lack of exercise or protracted special exercising of any organ. Should functional differences of importance appear they are to be regarded as a persistence of the results of past conditions rather than as the outcome of those belonging to the present era.

The physiological and medical studies here presented were undertaken with the view of recording and analyzing as far as possible the actual conditions among a large group of tribes; but they are not as detailed as could be desired, owing to the vastness of the field. The work consisted in carrying out with due care a limited number of practicable observations, and, beyond this, in utilizing as far as possible any opportunities for gaining knowledge that presented themselves.

All the tests and measurements were made by the writer himself with reliable instruments and under proper precautions. In addition to certain statistics the physiological data consist of records of the pulse, respiration, temperature, and muscular strength, observations on a few phases of senility, and the results of examinations of a large number of children from birth onward, while the more strictly medical data which follow comprise notes on hygiene, diseases, treatment, and medicines.

Proportion of Sexes

Reliable data as to the percentage of each sex in the Indian population dealt with in this work are restricted to those tribes that live in the United States, the principal sources of information being the Eleventh (1890) and the Twelfth (1900) censuses and the reports of the Commissioner of Indian Affairs.

According to the Twelfth Census, the proportion of males to females among the 65,843,302 native-born whites in the United States was in 1900 as 102.5 to 100. In other words, there were 50.6 per cent of males to 49.4 per cent of females. Under the same enumeration the proportion of males to females among the 232,562 mainland Indians was shown to be 101.4 to 100, or 50.4 per cent of males to 49.6 per cent of females. The native-born white males exceeded the females by 1.2 per cent; the Indian males exceeded the females by 0.8 per cent. This difference is not of sufficient weight to warrant any important deductions.

The proportion of Indian males to females varies in different areas, especially among the tribes studied by the writer. This state of things may be attributed largely to other than natural conditions. The total number of Indians in Arizona in 1900 was 26,480, of which 13,551, or 51.2 per cent, were males and 12,929, or 48.8 per cent, females. In New Mexico at the same time the number of Indians reported was 13,144, of which 6,828, or 51.95 per cent, were males and 6,316, or 48.05 per cent, females. Among the tribes visited the conditions, according to the latest data obtainable,[a] were as follows:

Proportion of sexes

Peoples.	Male.	Female.	Sex ratio.[b]
	Per cent.	*Per cent.*	
Native-born whites	50.6	49.4	102.5
Mainland Indians	50.4	49.6	101.4
I. Southern Ute[c]	50.9	49.1	103.7

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[a] The details of the Twelfth Census on this point are not yet available.

[b] Number of males to each 100 females.

[c] Eleventh census, 1890. The data for the Navaho are the least accurate and it is very likely that some proportion of males belonging to Arizona were counted among the Utah contingent of the tribe.

Proportion of sexes—Continued

Peoples.	Male.	Female.	Sex ratio.
II. Apache:			
White Mountain[a]	47.8	52.2	91.6
San Carlos[b]	48.8	51.2	95.3
	49.0	51.0	96.1
Mescalero[a]	41.1	58.9	69.8
Jicarilla[a]	48.6	51.4	94.6
Walapai[a]	51.1	48.9	104.5
Havasupai[c]	51.3	48.7	105.3
III. Navaho:			
Arizona[d]	48.6	51.4	94.6
New Mexico[d]	50.6	49.4	102.4
Utah[d]	55.4	44.6	124.2
IV. Pueblos:			
Hopi[a]	50.4	49.6	101.6
Zuñi[a]	50.6	49.4	102.4
Rio Grande Pueblos[d]	54.4	45.6	119.3
V. Papago: Arizona[d]	52.4	47.6	110.1
VI. Pima: Arizona[d]	50.7	49.3	102.8
VII. Maricopa[d]	52.7	47.3	111.4
VIII. Mohave:			
Colorado River agency[c]	52.0	48.0	108.3
Fort Mohave[a]	52.9	47.1	112.3
IX. Yuma:			
San Carlos reservation[d]	53.3	46.7	114.1
Yuma reservation[d]	54.6	45.4	120.3

The proportion of males to females is remarkably low among the Apache proper, this condition being undoubtedly a result of the great loss of males in the earlier years of their history by death in raids and war or by capture.

On the other hand, the excess of males is considerably higher among the relatively pacific Rio Grande Pueblos, Papago, Maricopa, Mohave, and Yuma, and from slightly to moderately higher among several of the remaining tribes, than among the American whites. This is an interesting condition, which calls for elucidation.

Unfortunately, adequate and reliable statistics as to the proportion of the sexes at birth and as to relative mortality are not yet obtainable. Limited direct inquiries by the writer show the following condition as to births:

Thirty-seven San Carlos Apache women beyond the child-bearing period when inquiries were made[e] had brought forth a total of, boys, 53.49 per cent; girls, 46.51 per cent.

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[a] Report of agents to Commissioner of Indian Affairs, 1904.

[b] Ibid., 1901, 1904.

[c] Ibid., 1903.

[d] Eleventh Census, 1890. The data for the Navaho are the least accurate and it is very likely that some proportion of males belonging to Arizona were counted among the Utah contingent of the tribe.

[e] Of ages approximately from 50 to 80. The numbers represent all the old women of fair intelligence met with during the studies. No difficulties were encountered in obtaining the answers, and, as every living and dead child had to be specified, the opportunity for error, if any, was but slight.

Thirty-five Pima women, beyond the child-bearing period at the same time, had brought forth a total of, boys, 52.84 per cent; girls, 47.16 per cent.

According to these data the number of boys at birth among the Apache was as 115 and among the Pima as 112.1 to 100 girls. This exceeds anything ever observed with living births among the whites. Among white Americans during the year 1900 the births were only 104.9 boys to 100 girls, while among Europeans (except Jews, among whom it is higher) the ratio averages, according to Düsing, Nichols, Srdiolo, and others, about 106 to 100. It is probable the excess of males over females wherever it occurs in the Southwestern tribes is due primarily to the large birth rate of male children.

Yet peculiarities of the death rate may also in some instances be a factor. In one of the above series (the Piman), owing probably to exceptional conditions of life, the percentage of females dead at the time of inquiry exceeded somewhat that of males.[a] While a factor not yet clearly understood, a considerable excess of males is not regarded as conducive to the preservation of the race.

With regard to families in which one or the other sex predominates, the data obtained by the writer are as follows:

Tribes.	Women who had more boys than girls.		Women who had more girls than boys.		Women who had an equal number of boys and girls.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
San Carlos Apache	20	54	13	35	4	11
Pima	16	50	14	44	2	6

The whole subject is deserving of further attention. The United States Census or the Office of Indian Affairs would render a valuable service to science by the extension of this line of inquiry to all tribes and to all or at least a large number of Indian women of and beyond the child-bearing period. The inquiry here suggested should be extended further to include Indian women married to whites and women of mixed blood.

POPULATION BY AGES

It is very desirable and would be equally instructive to have accurate data regarding longevity among the various Indian tribes and the proportion of individuals of different ages composing them. Unfortunately, in this case, as with many other points of inquiry, the investigator meets with a great obstacle—the lack of age records. The uneducated Indian—and such are the majority of those dealt with in this work—does not keep any record of his age or of that of his children. With patient inquiry it is often possible to arrive at a close approximation to the age of a particular person, but with large numbers the method is not practicable. Estimating age on the basis of ascertained cases is, except with smaller children, really the only other means that can be employed with any considerable degree of success. This method may be of service, provided the limits allowed in the estimates, especially in the case of persons above middle age, are quite liberal.

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[a] See also next two chapters and detail table under Size of Families.

The Twelfth Census gives the nearest approach yet attained to reliable data on population by ages among the Indians. The count applies to all the tribes in bulk; as there are individuals among many of these tribes more or less educated and taught to pay attention to age, errors, with their attendant effects, inevitable elsewhere, are lessened. Another favorable feature is the fact that, with the more primitive tribes, who are segregated on reservations, the enumerator was generally the agent or some one else well acquainted with the Indians and thus less likely than an outsider to make gross errors in recording ages. Yet the results furnished, which follow, should not be looked on as wholly accurate.

Population by ages[a]

Ages.	232,562 Indians of the mainland.			40,837,331 native whites in United States born of native parents.		
	Males.	Females.	Sex ratio.[b]	Males.	Females.	Sex ratio.[b]
	Per thousand.	*Per thousand.*		*Per thousand.*	*Per thousand.*	
All ages	503.59	496.41	101.4	508.68	491.32	103.5
Under 1 year	15.26	15.21	100.3	14.39	13.95	103.2
Under 5 years	72.96	71.98	101.4	67.91	65.91	103.0
5 to 9 years	68.85	68.47	100.6	64.27	62.45	100.0
10 to 14 years	62.04	58.27	106.5	57.91	56.21	103.0
15 to 19 years	52.91	50.96	103.8	51.98	51.73	100.5
20 to 24 years	43.78	41.75	104.9	46.62	46.57	100.1
25 to 29 years	36.57	34.86	104.9	40.03	38.54	103.9
30 to 34 years	29.32	28.87	101.6	33.61	31.51	106.6
35 to 39 years	26.41	25.82	102.3	29.19	27.12	107.6
40 to 44 years	25.18	25.15	100.1	26.86	24.68	108.8
45 to 49 years	21.79	20.91	104.2	22.95	20.82	110.2
50 to 54 years	18.86	18.39	102.6	19.88	18.12	109.7
55 to 59 years	12.53	12.77	98.1	14.83	14.67	101.1
60 to 64 years	11.42	12.81	89.1	11.84	11.81	100.3
65 to 69 years	7.77	8.59	90.4	8.86	8.77	101.0
70 to 74 years	5.91	7.03	84.1	5.99	5.98	100.0
75 to 79 years	3.14	3.85	81.6	3.58	3.67	97.5
80 to 84 years	2.16	3.17	68.1	1.69	1.84	91.8
85 to 89 years	.80	1.28	62.5	.56	.69	81.2
				Per million.	*Per million.*	
90 to 94 years	.71	.92	77.2	118.00	174.00	67.8
	Per million.	*Per million.*				
95 to 99 years	232.00	305.00	76.1	17.00	34.00	50.0
100 years and over	224.00	254.00	88.2	3.00	6.00	50.0

[a] Prepared by the writer from data of the Twelfth Census, 1900, I, II, Population.

[b] Number of males to each 100 females.

The above figures are remarkable in a number of particulars; however, they embody the complex results not only of natural but also of social conditions. It is plain that in general the cycle of life with the Indians and the native white Americans is much the same. In details, the Indian population shows a greater proportion per thousand of young and again of very old people and a less proportion of those of the intermediate years than whites. At present the Indians have relatively more males than the whites during all the years up to 20, and again during all the years above 80, and relatively fewer between 20 and 80; they also have relatively more females than the whites during all the years up to 15 and from 40 to 55, 60 to 65, and above 70, but relatively fewer during the intermediate periods. These facts suggest a good Indian birth rate, a large death rate during adolescence and adult life, and possibly somewhat greater longevity of those who survive to old age. However, the Indian population still shows to some extent the results of former wars, and, on the other hand, the destructive Civil war may yet show its influence in some of the series of whites.

The proportion of nonagenarians and especially centenarians among the Indians is far in excess of that among native white Americans. It may be objected that the sources of error are apt to be greater among the Indians in such cases, and that the low ratio for males between 80 and 90 years of age may signify that some individuals of this group were classed as older, but the objection is not so serious as might be anticipated, on account of the marked general interest centering about the oldest in every tribe; at all events, no ordinary error could account for the extreme disproportion of centenarians observed, viz, 224 per million of Indians to 3 per million of whites. The relative excess of aged persons (80 years and above) among the Indians can signify only that the infirmities and diseases known ordinarily as those of old age are less grave among them—a conclusion in harmony with general observation.

The sex ratio, while apparently following the same law in the two races, presents, nevertheless, some interesting differences, particularly in more advanced age. A striking feature is the excess of males over females among the whites up to the seventy-fifth year, among the Indians up to the fifty-fifth year, and an excess of females over males during all later years. The aged male of the Indians, as well as of the whites, meets death on the average somewhat earlier than the aged female.

Size of Families

Concerning the size of families of the Indians of the Southwest, and particularly those in northern Mexico, official vital statistics are lacking, and accurate individual observations are not yet extensive. Several points are, nevertheless, plain. The birth rate is usually high, but as the mortality also is high, large families are uncommon. But even as it is, were it not for the occurrence of epidemics all the better conditioned tribes of this region would be increasing in numbers.

Among the Southern Ute the average number of living children to a family was reported in 1890 as 3.[a] According to the writer's own notes, the living children in families of this tribe range from 2 to 5, being more often nearer the former than the latter number; but the results of the inquiries, owing to the unfriendly disposition of the people, were unsatisfactory. A Ute woman who had borne 15 children was reported as living on the eastern end of the reservation. The Southern Ute as a whole, however, have been slowly but steadily decreasing in numbers.

Among 4,041 San Carlos and White Mountain Apache in 1890 there were nearly 600 families, including 1,383 married persons, who had living 195 children under 1 year of age (20.7 per thousand of population, or about 1 to every three families). At White Mountain the writer was informed of several women who had given birth to 9 or 10 children each.

Special inquiries along similar lines were made among the San Carlos Apache and the Pima.[b]

Among the San Carlos Apache, 37 women, all beyond the child-bearing period, had borne 258 children, an average of nearly 7 each. One of the 37 had 12, one 11, six 10, and seven 9 children each. Among the Pima, 35 women beyond menopause had borne 246 children, or an average of a little more than 7 each. There were three among these women who had never borne a child, and should these be ignored the average of children born of the others rises to 7.7. Four had borne 12, two 11, four 10, and four 9 children each. (See tables at the end of the chapter.)

As the two tribes may be safely taken as representatives of a large number of others living under similar conditions, it is evident that the fertility of the Indian woman is in many localities, if not generally, equal to the preservation of the race. It is not a deficient birth rate but great mortality which keeps the majority of the tribes from increasing rapidly.

The living Navaho family is generally moderate in size, but the tribe is increasing in numbers. The living Hopi family also is usually of moderate size. In 1890 the latter people numbered 1,996 persons, of whom there were, under 6 years, 288; between 6 and 18 years, 590; and above 18 years, 1,118. There were 364 heads of families, which gives on the average 5.5 living persons to a family. The tribe seems to be slightly increasing in numbers, although it has suffered much from epidemics.

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[a] Special Agent G. D. Merton, in Report on Indians, *Eleventh Census*, 1890, 229, Washington, 1894.

[b] These two tribes were chosen for detailed studies because they represent physically the most diverse groups of the Southwest and of northern Mexico. The Pima are dolichocephalic, the Apache highly brachycephalic, besides having other points of difference.

In 1900 the Zuñi, according to data kindly furnished by Mr. D. D. Graham, agent of the tribe, with a population of 1,525, had 267 families, which gives 5.7 as the average number of living persons in each. The births from July 1, 1903, to June 30, 1904, amounted to 41 (27 per thousand), the deaths in the same period to 37. The tribe as a whole is scarcely maintaining its numbers.

Among the San Xavier Papago the ordinary number of living children in a family ranges from 3 to 5. In the largest family brought to the writer's attention there had been 12 children, but most of these were dead. The people of this tribe are, in all probability, increasing.

Of late the Maricopa are decreasing in number, though the reason is not clear. The people are strong physically and in no way degraded.

No reliable statistics as to the size of the Mohave family are at hand, but the mortality is large and the tribe hardly holds its own. Among the 551 Mohave temporarily settled on the San Carlos reservation in 1890, the married persons numbered 239;[a] the children under 1 year of age, 17 (31 per thousand); number of births during the year, 17 (31 per thousand); number of deaths, also 17 (31 per thousand).

The 240 Yuma on the San Carlos reservation in 1890 constituted 48 families,[b] averaging 5 living persons to a family; there were among them 6 children under 1 year of age (25 per thousand). Among the Colorado River Yuma Dr. W. E. Ferrebee reports at the same period[c] that "the families average 3 or 4 children (living) each." The people are, at present, in all probability holding their own in numbers or increasing slightly.

With regard to the families of the northern Mexican Indians official data are wanting. Among the Sonora Opata,[d] the Yaqui, and probably the Pima, according to the writer's observations and information, the women are decidedly prolific, even though large families are seldom reared; from a number of causes elsewhere unusual, the tribes are, however, rather diminishing in numbers. Among the Tepehuane, Huichol, and Cora the living family is, on the average, of moderate size; and among the more degraded Otomi as well as the Aztec it is often small, in all probability insufficient to keep up the numerical strength of the people. Among the purer-blooded and more primitive Otomi, in districts like that of Fajayucan in Hidalgo, the families are larger.

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[a] Report on Indians, *Eleventh Census*, 1890, 152, Washington, 1894.

[b] Ibid., 153.

[c] Ibid., 221.

[d] See limited data on p. 79 in writer's Notes on the Indians of Sonora, Mexico, *American Anthropologist*, VI, no. 1, Jan.-Mar., 1904.

The following detailed data on the San Carlos Apache and the Pima clearly show the large birth rate and great mortality in youth. They demonstrate also the before-mentioned large sex ratio at birth.

The disproportion of males and females among the surviving Pima children in this enumeration must be regarded as accidental

Detailed family data

SAN CARLOS APACHE

No.	Subject.	Total children born.	Boys.	Girls.	Living.			Dead.			Miscarriages and causes.
					Total.	Boys.	Girls.	Total.	Boys.	Girls.	
1	Elderly woman	7	4	3	2	2	0	5	2	3	0
2	Old woman	6	4	2	1	1	0	5	3	2	0
3	.....do	9	7	2	2	2	0	7	5	2	0
4	Elderly woman	4	2	2	0	0	0	4	2	2	0
5	Old woman	3	2	1	1	1	0	2	1	1	0
6	.....do	6	1	5	4	1	3	2	0	2	1
7	.....do	7	2	5	3	2	1	4	0	4	0
8	.....do	9	3	6	1	1	0	8	2	6	0
9	Elderly woman	4	0	4	4	0	4	0	0	0	0
10	Woman about 50 years	10	6	4	2	2	0	8	4	4	0
11	Elderly woman	10	4	6	2	0	2	8	4	4	0
12	.....do	12	7	5	4	1	3	8	6	2	0
13	Old woman	10	8	2	2	1	1	8	7	1	0
14	Woman (daughter of preceding, has not reached menopause, about 40 years)	9	5	4	5	4	1	4	1	3	0
15	Old woman	3	3	0	0	0	0	3	3	0	[a] 3
16	Woman about 45 or 50	8	4	4	5	2	3	3	2	1	0
17	Old woman	3	2	1	1	1	0	2	1	1	1
18	Elderly woman	2	0	2	1	0	1	1	0	1	0
19	Woman about 45 (has not yet reached menopause)	9	3	6	4	0	4	5	3	2	0
20	Old woman	5	5	0	2	2	0	3	3	0	0
21	Elderly woman	11	6	5	3	2	1	8	4	4	0
22	Old woman	10	8	2	3	2	1	7	6	1	0
23	.....do	10	6	4	4	3	1	6	3	3	[b] 2
24	Woman about 50	4	3	1	3	3	0	1	0	1	[c] 1
25	Elderly woman	10	3	7	7	1	6	3	2	1	0
26	Old woman	6	1	5	3	0	3	3	1	2	0
27	Elderly woman, past menopause	8	6	2	4	3	1	4	3	1	0
28	Old woman	3	2	1	2	1	1	1	1	0	0
29	.....do	9	5	4	3	2	1	6	3	3	0
30	.....do	4	2	2	2	1	1	2	1	1	0
31	.....do	8	3	5	1	1	0	7	2	5	0
32	.....do	6	2	4	4	2	2	2	0	2	0

[a] Cause: In all instances, carrying heavy loads.

[b] Both female children; 1 miscarriage due to fall, other, to carrying too heavy load of wood.

[c] Cause: riding horseback.

Detailed family data—Continued

SAN CARLOS APACHE—Continued

No.	Subject.	Total children born.	Boys.	Girls.	Living.			Dead.			Miscarriages and causes.
					Total.	Boys.	Girls.	Total.	Boys.	Girls.	
33	Woman about 50	9	7	2	6	4	2	3	3	0	0
34	Woman about 45	8	4	4	5	4	1	3	0	3	0
35	.....do	2	0	2	2	0	2	0	0	0	[a] (7)
36	Old woman	9	4	5	4	2	2	5	2	3	0
37	.....do	5	4	1	1	1	0	4	3	1	0
	Total (37 women)	258	138	120	103	55	48	155	83	72	8

[a] Mother had syphilis; not counted with the others.

RECAPITULATION

[37 San Carlos Apache women]

Subjects investigated.	Total.	Percentage of total born.	Percentage of number of living and dead.	Ratio (females =100).
Total births	[a] 258			
Boys	138	53.50		115
Girls	120	46.50		
Total surviving	103	39.92		
Boys	55	39.85	53.40	114.6
Girls	48	40.00	46.60	
Total died	155	60.08		
Boys	83	60.15	53.55	115.3
Girls	72	60.00	46.45	

[a] Average 7 (6.97).

Miscarriages: 8 in 36 women = 22 per 100 women, or 1 to 32 normal births; and 7 in 1 woman, due to specific infection.

PIMA

No.	Subject.	Total children born.	Boys.	Girls.	Living.			Dead.			Miscarriages.	Twins.
					Total.	Boys.	Girls.	Total.	Boys.	Girls.		
1	Woman about 70	6	2	4	2	2	0	4	0	4	0	0
2	Woman about 55	3	1	2	1	1	0	2	0	2	0	0
3	Woman about 60	12	8	4	4	3	1	8	5	3	0	0
4	.....do	10	2	8	3	0	3	7	2	5	0	0
5	Old woman	0	0	0	0	0	0	0	0	0	1	0
6	Woman about 60	6	1	5	6	1	5	0	0	0	0	0
7	Woman about 55 or 60	9	7	2	2	2	0	7	5	2	0	0
8	Woman about 70	11	8	3	2	2	0	9	6	3	0	0
9	Old woman	10	6	4	5	4	1	5	2	3	0	0
10	Woman about 55	0	0	0	0	0	0	0	0	0	0	0
11	Woman about 70	7	3	4	3	1	2	4	2	2	0	0

Detailed family data—Continued

PIMA—Continued

No.	Subject.	Total children born.	Boys.	Girls.	Living.			Dead.			Miscarriages.	Twins.
					Total.	Boys.	Girls.	Total.	Boys.	Girls.		
12	Elderly woman	6	2	4	3	1	2	3	1	2	0	0
13	Old woman	11	5	6	2	1	1	9	4	5	0	0
14	do	10	6	4	2	1	1	8	5	3	0	0
15	do	5	4	1	2	1	1	3	3	0	0	0
16	Woman about 70	10	7	3	4	3	1	6	4	2	0	0
17	Old woman	5	4	1	3	2	1	2	2	0	0	0
18	Woman about 60	12	4	8	2	1	1	10	3	7	1	1 pair.
19	Woman about 45 (daughter of preceding)	5	3	2	2	2	0	3	1	2	0	0
20	Old woman	6	3	3	1	1	0	5	2	3	0	0
21	Woman 55 to 60	8	5	3	3	1	2	5	4	1	1	0
22	Old woman	0	0	0	0	0	0	(a)	(a)	(a)	(6)	0
23	Woman about 60	5	5	0	1	1	0	4	4	0	0	0
24	Woman about 50	12	5	7	6	3	3	6	2	4	[b] 1	0
25	Woman about 65	9	2	7	1	0	1	8	2	6	0	0
26	Woman about 60	4	1	3	2	0	2	2	1	1	0	0
27	Woman about 65	4	1	3	1	1	0	3	0	3	0	0
28	Woman about 80	7	7	0	2	2	0	5	5	0	0	0
29	Woman about 55	8	5	3	4	3	1	4	2	2	0	0
30	Woman about 65	6	4	2	2	1	1	4	3	1	0	0
31	Old woman	9	6	3	4	4	0	5	2	3	0	0
32	Woman about 60	2	1	1	1	0	1	1	1	0	0	0
33	Woman about 65	9	5	4	0	0	0	9	5	4	0	0
34	do	7	3	4	5	2	3	2	1	1	0	0
35	Old woman	12	4	8	2	1	1	10	3	7	0	0
	Total (35 women)	246	130	116	83	48	35	163	82	81	4	1

[a] Not 1 living child. [b] Girl.

RECAPITULATION

[35 Pima women]

Subjects investigated.	Total.	Percentage of total born.	Percentage of number of living and dead.	Ratio (females =100).
Total births	[a] 246			
Boys	130	52.85		112
Girls	116	47.15		
Total surviving	83	33.74		
Boys	48	36.92	57.83	137
Girls	35	30.17	42.17	
Total died	163	66.26		
Boys	82	63.08	50.31	101
Girls	81	69.83	49.69	

[a] Average, 7.03.

Miscarriages: 4 in 34 women = 12 per 100 women, or 1 to 61 normal births; and 6 in 1 woman, due to specific infection.

Reproduction

In this chapter are taken up the more direct observations among the tribes, which, it seems to the writer, begin logically with data relating to reproduction and the first stages of the life of the Indian. The notes on the several topics included under this heading are, as with other subjects, necessarily somewhat combined with matter relating to the habits and views of the people.

MARRIAGE

Marital life among the Indians of the southwestern United States and northern Mexico is entered into on the average at an earlier age than among the whites. While not generally a result of mutual attraction, a degree of mutual pleasing, at least, is usually considered essential to the union. The practice of obtaining a wife by rape does not exist. Voluntary loss of chastity on the part of the unmarried woman, while not very frequent, is not regarded as a serious obstacle to future marriage. Often, though less directly than among whites, the girl exercises the right of acceptance, and the married woman the privilege of separation.

The married state among all the Indians visited has been in the past and still is less stable than among the whites, though hardly less moral. There is no polyandry. In former years polygamy was general among the Indians of southwestern United States, and among most of the less civilized tribes of northern Mexico; it still exists among the latter, and only recently, under compulsion, is it being abandoned by the Apache and other tribes in Arizona and New Mexico. There are reasons for believing that obligatory defloration of marriageable girls, promiscuous sexual intercourse, and possibly even pederasty (ceremonial) still take place occasionally in a few of the tribes. Since polygamy ceased the separation of husbands and wives and their remarriage to others are particularly common among the Indians of southwestern United States. Such conduct is not regarded among these tribes as in any way derogatory to the participants.

Intermarriage of near relatives is not known among any of the tribes visited, even where the exogamous clans have ceased to exist. It is not uncommon, however, for the more distant cousins to unite in marriage, or for a woman to bear children to her stepfather or to her sister's husband. Among the smaller tribes, as the Havasupai and some of the Pueblos, there must of necessity be considerable intermarriage among more distant relatives.

Among the Southern Ute, according to information given by the Indians themselves, sexual life begins at an early age; but marriage does not seem to be entered into generally quite as early as among the Navaho and some of the other Indian tribes visited. It is not rare to find in the tribe unmarried men and women more than 18 and even 20 years of age. Polygamy, though infrequent, is still met with. Leaving or changing wives or husbands is not uncommon, especially among the Wiminuche. Sexual morality in general in 1900, at the time of the writer's visit to the tribe, was of a rather low order.

Among most of the Apache the event of a girl reaching puberty is an occasion for a feast which her parents give, announcing her arrival at womanhood.[a] According to statements made to the writer by men of the tribe, only a few girls attain the age of 16 years or more without marrying; he saw, however, two girls not yet married, each of whom was surely more than 18.

Among the Apache as well as among the Navaho the girl is given to a husband after he has made gifts of horses and blankets to her family,[b] but the woman is not bought as a passive chattel. Among the White Mountain Apache the accepted young man is allowed to live sexually with his prospective wife for some time before marriage[c] takes place, and they can separate if not mutually satisfied. The final marriage is very simple.

It is not rare for a young man to marry a rather old woman. The writer witnessed one such instance as late as 1905. The explanation given of this is that on the one side the woman secures a young, strong man to work the fields, while on the other side the woman is usually one having a daughter approaching maturity, who also in the course of time becomes the man's wife (or concubine).

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[a] Among the White Mountain people the first appearance of menses is celebrated by an all-day feast in which friends are called to participate. They kill a cow and have "lots of coffee and bread," and beat the drum the whole day. The first menstruation day is a fortunate day, and the people pray that all may be well with the girl, and that she may become a good and healthy woman and a good mother. They also pray for general plenty. Although the feast serves as a notice that the girl has become a woman, marriage may not be arranged until much later. The San Carlos Apache no longer observe the feast.

[b] Marriages among the Apache are now often the result of mutual liking. The exceptions are mostly in the case of old men who secure wives much younger, or young men married by older women. By some of the old people the girl is given less choice than by others more decidedly affected by modern views, the marriage arrangement in such cases being principally the affair of the parents. The father and mother of the girl are approached by the parents of the boy, and there are four talks concerning the marriage, after which a decision is given. The husband to be must furnish a number of horses, cows, saddles, blankets, buckskins, and other things of value, which are, or should be, divided among the bride's relatives. In return the people of the bride are expected to supply certain things of value for the bridegroom's relatives. By this arrangement both parties are often in the end nearly even; but there is opportunity for the exercise of selfishness or greed.

[c] The marriage is arranged by intermediaries who are usually old men. These go to the house of the girl's parents and arrange the barter. When this is concluded, the bridegroom is at liberty to come every night to the wife's camp, or she to his, until a khuva (typical native hut, pl. II, c) is built by the girl. If both parties are content, then the marriage is considered as concluded. If not, they may separate, the articles given are mutually returned, and their relations are at an end.

Among the Jicarillas marriage takes place in the following manner: A young man desiring to marry a certain girl goes to her father and makes arrangements for obtaining her. If everything is satisfactory, he buys cloth for a tipi, a supply of calico, and whatever is needed for housekeeping. He takes these to the house of the girl's parents. With the assistance of her mother and perhaps her sister, the girl makes up the cloth into a tipi and the calico into dresses. When all is ready, the tipi is set up and without further ceremony the bridegroom joins his bride in their new home. The relatives of the girl receive but little compensation.

Divorce is easily accomplished in the tribe, and the man and woman remarry, usually without difficulty. There are cases even at the present time in which comparatively young men educated in white schools have had a half dozen or more wives.

As to polygamy, there were in 1890 among about 600 married Apache men on the White Mountain and Fort Apache reservations 87 who had two and nine who had three wives each.[a] At the time of the writer's visit in 1900 the number of polygamous marriages, as a consequence of the efforts of the agents, was much smaller. Among the San Carlos, Jicarilla, and Mescalero Apache polygamy apparently has ceased to exist.

There is prostitution among the White Mountain Apache and also among the San Carlos Apache, with the whites as well as intratribal, and the same is probably true of the Mescaleros. Among the Jicarillas, however, mainly from the fear of a possible introduction of venereal diseases, the women are threatened with death for sexual transgressions with white men and shun such relations. The fact that a girl has borne a child before marriage does not bring her into great discredit among any of the Apache.

Among the Navaho girls marry quite early (after puberty), but the young men, obliged to accumulate some property before they can obtain brides, marry at later ages. The writer has seen several brides of from about 14 to 16 years of age, and, on the other hand, has met a number of adult individuals of both sexes who, though in normal health, were still unmarried. Some of the richer men still have two or, rarely, three wives. In one of the families living near Pueblo Bonito, a Navaho is married to two sisters.

All the Hopi women, the writer was told by the chiefs, marry, as do all the men; they could recall but one man who remained his whole life single. Marriage results often from mutual attraction, though the arrangements belong to the parents. It may take place at any time after puberty, but at present a girl is seldom married before her sixteenth year.

The Zuñi girls marry in some cases soon after puberty[b] (which takes place mostly at from 11 to 14 years of age); the majority, however, marry at from 15 to 18. Sexual indulgence is said often to precede marriage; illegitimate children, however, are considered a disgrace.

The Papago girls in the more civilized villages marry, on the average, rather later than the girls of the nonreservation Papago and those of some other tribes. At San Xavier the writer was informed that a marriage before the sixteenth or seventeenth year on the part of the girl, and the twentieth on that of the young man, is rare. Marriages are arranged by parents "when they think the boy or girl ready to marry," the feelings of the parties not being always heeded. Individuals who never marry are but few.

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[a] Report on Indians, *Eleventh Census*, 1890, 150, Washington, 1894.

[b] According to Mrs. M. C. Stevenson (The Zuñi Indians, *Twenty-third Annual Report of the Bureau of American Ethnology*, 303), marriages in the tribe also take place before the girl has reached puberty (belated puberty?).

Marriage among the Pima, according to Chief Antonio Azul, takes place sometimes from love, but perhaps more often by the will of parents. The first menstruation is regarded as indicating fitness for marriage. Some of the girls, especially before the large boarding school was established, married at as early an age as 14. In one case both the young mother and her child were pupils in the agency school.

The Mohave young men and women do not live together before their marriage. There is, however, but little restraint on sexual relations. Not a few girls have one or more children before marriage, mostly by their brothers-in-law or stepfathers. There is but little shame attached to this practice, and such girls marry the same as others. The father is made to take care of the illegitimate child, which is usually called by some ancient name.

Among the Yuma on the Colorado, according to reliable reports, sexual relations with girls are usually established soon after puberty and quite irrespective of marriage. Prostitution, especially with whites, appears to be tolerated; at least, there are indications that it is not uncommon.[a]

Among many of the Mexican tribes much that related to marriage has been more or less altered by views resulting from contact with whites and change in religion. On the whole, a moderately early marriage (girls 16 to 18, men 18 to 21) is favored. Among the least civilized tribes the conditions are much like those among the majority of the Arizona and New Mexico Indians. Chastity in a girl is not held very high. The fact that a girl has a child before marriage, or has been divorced, is, where church influence does not reach, of little hindrance to marriage. Some intratribal prostitution is everywhere freely acknowledged, and wherever the natives live near the whites mixture, both clandestine and by marriage, is prevalent. Very early marriages (13 to 15 years) take place occasionally among the Tarahumare, Huichol, and probably among others of the more primitive tribes. Among the Tarahumare old men seek to marry young girls. Among the Cora the parents of the young man approach those of the young woman whom they believe to be suitable for their son, and if an agreement is reached the couple are married even if not known to each other. Polygamy is still prevalent among the Tarahumare,

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[a] Compare accounts in the Reports of the Commissioner of Indian Affairs and those in the Report on Indians, *Eleventh Census*, 1890. Although exaggeration must be guarded against, the evidence as to the dissolute life of at least some of the Yuma women is ample.

Tepecano, and Huichol, and to lesser degrees among the Cora and Tepehuane. It has disappeared wherever the white man's religion has gained a firm foothold.

The life of the married Indian is ordinarily, as the writer had a chance to observe in many localities and instances, one of quiet and contentment rather than of active, demonstrative happiness, and often one of greater independence of action of both parties than among most whites. It is decidedly a more primitive, more natural family life, one of less mutual regard as well as helpfulness. In some tribes the husband exercises more authority over his wife than in others. In most tribes if the woman displeases her husband, or if he becomes jealous, she is liable to be maltreated by him. Among the Huichol, for example, a man beat his wife because she permitted herself to be measured by the writer against her husband's wishes; the woman was old and it could hardly have been a question of jealousy. Unfaithfulness on the part of the wife, if detected by the husband, is generally punished corporally. Among the Apache, until about twenty-five years ago, in some instances the jealous husband or the female relatives cut off the unfaithful wife's nose;[a] in rare instances the husband killed her.

After marriage, conception with the Indian woman occurs usually without much delay. There were no signs of any important differences, either in this respect or in the periods between successive pregnancies, as compared with the average white woman.

Further peculiarities of the sexual life of the people could not be inquired into with profitable results. From various indications the subject does not offer much of unusual interest.

There are no mutilations of the genital organs, with one possible exception. An artificial production of the so-called "mujerados," for purposes of ceremonial pederasty, among some of the Pueblos was reported, but it is not known whether this is still practised.[b]

STERILE WOMEN; PREFERENCE OF SEX; GESTATION

Women sterile by nature occur in every tribe, but the proportion is always small.

There are only a few childless women, known as *ka-tu-a-wit*, among the Southern Ute. The people have no definite theory concerning the condition.

Some naturally sterile women were met with among the White Mountain and other Apache. There is no special term by which others designate such women except *tu-il-sih-ta* ("never-get-a-child"), and, as elsewhere, not much attention seems to be given to the condition. At San Carlos sterility in women is well known, and is believed by the women to be the men's fault. A young woman who, though well developed and healthy looking, and menstruating regularly, remained sterile, was pointed out to the writer. Her first marriage was dissolved on account of the sterility, on the supposition that the man might be the cause of it. She was given another husband, with whom she has now lived for more than two years, but there has been no conception. Among the Navaho, Zuñi, and Papago women sterility is rare. A few sterile women were pointed out to the writer among the Pueblos and the Pima, and several such, known as *cha-aik* ("barren") were living at the time of his visit among the Mohave. On the First mesa of the Hopi there were in 1900 four women who, although married for more than ten years each, had never become pregnant. Among the Tarahumare sterile women are called "mules." The Cora told the writer that occasionally one of their women has no child until the third or fourth year after marriage, and a few have never borne any. Similar accounts as to childless women were heard in all the other tribes. The opinion that the male may be the cause of the childless marriage was met with in several tribes besides the Apache.

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[a] "As a punishment for adultery on the part of the wife [among the Apache] the nose was formerly cut off, but this practice seems to have been abandoned in later years, for, on a visit among them and after observing about 3,000 Indians, I saw only seven women so disfigured, and they had reached or passed the middle age."—Special Agent Stephen Whited, Report on Indians, *Eleventh Census*, 1890, 150.

Four women, all above 50 years of age, with their noses cut off, were seen by the writer in 1905 at San Carlos. It was said that most of the mutilations were the work of the other women of the tribe.

[b] Hammond, W. A., Sexual Impotence in the Male, New York, 1883.

All the young Indian wives want to have children. In some instances they prefer boys to girls; in others they desire children of both sexes.

Usually, though not always, the White Mountain Apache woman desires a boy. In this tribe when a pregnant woman wants especially a boy or a girl, she calls on a medicine-man or woman, who plays on the violin, uses certain incantations, touches the woman's abdomen, and gives her to take internally some of the much used sacred yellow tule pollen (*hadntin*). Women who wish to have children, or who want more children after being unfruitful for a time, are sometimes given by a medicine-woman a cluster of the eggs of a certain spider; this dose is handed to a relative to put into meat or other food without being cooked or otherwise prepared, to be given the patient without her knowledge. It is supposed that the many eggs of the particular spider referred to will bring about conception—in other words, that the prolificness of the spider will induce a similar condition in the woman. The San Carlos and the Tonto Apache women want girls as well as boys, for the former would soon be able to aid the mother in her domestic duties.

On one occasion the Walapai women were observed by Doctor Perkins, their agent, to cut off, with avidity, the feet of a gopher; they said that the feet are boiled and eaten by young women in order "to have many boys and girls."

As to preference of sex among the Pima, formerly, when the people used to fight, the women say they wished for boys; now they wish more for girls, who can cook for them and help them in other ways. They believe that if a woman will eat one seed of the gourd which is commonly used for water she will have a boy.[a] The Zuñi want many children of both sexes; only a few of those asked with regard to sex showed any preference,[b] and the same may be said of the Mohave. The Tarahumare desire boys much more than girls. A woman who wants a boy will sing during the sexual intercourse *ta-ur*, *ta-ur*. They want boys because they may become great foot racers or even governors.

Pregnancy in its earlier stages generally interferes in no way with the woman's habits of life and occupation in any of the tribes, but it is very rare in any Indian settlement to see a woman near her term working hard, or even to meet her outside of the dwelling. Functional disturbance and diseases of pregnancy are much less frequent and less serious than with white women.

There are some curious notions about gestation as well as about the unborn child. In all the tribes the pregnant woman must observe certain tabus.

The Apache women believe that with both boys and girls gestation lasts during a period of from nine to ten moons, the time being counted by the new moon and from the last menstruation. The day of the new moon is fortunate for the child. It is believed that boys who begin to walk on that day will be fast runners. The women know no means of determining the sex of the child in utero.

The San Carlos Apache pregnant woman keeps about her usual duties as long as she is physically able to do so. She avoids no work from precaution. Beyond ordinary care the younger people know of no special tabu for her, but among the less civilized element of the tribe she is not allowed to be visited by strange people who might frighten her. She may eat anything she likes, and does not need to abstain from looking at an animal being killed or at blood. Some women have a little morning sickness, but others have none at all, suffering, on the whole, but little.

Among the Hopi the pregnant woman must not see blood or anything else likely to frighten her. The gestation period is counted by moons, and the rather prevalent opinion, perhaps based on the slight excess in size of the male child, is that it lasts longer with a boy than with a girl. No sign is much relied on as an indication of the sex of the unborn infant. Transgression in some of the tabus may result in the child being born an albino.

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[a] In case a child is born dead to a Pima woman and she does not want any more children, the body is buried with the face covered with wrappings and with the head deep in the little cave which is customarily made at the base of the grave. If, on the other hand, the mother desires to have more children, the face of the dead baby is not covered and the body is placed so that the head is directly under the shaft of the grave. Much faith is put in these expedients.

[b] Occasionally, when either a boy or a girl is specially desired, the people visit certain shrines to pray for the object of their wish. See Mrs. M. C. Stevenson, The Zuñi Indians, *Twenty-third Annual Report of the Bureau of American Ethnology*, 294.

The pregnant Zuñi woman "must be guarded from the sight of moving water, fish, and water reptiles no less than from fierce and fearful things." [a] The period of gestation is supposed to be ten lunar months in the case of a boy and nine lunar months in that of a girl. The mother has no means of determining whether she will have a boy or a girl. Artificial abortion, the people believe, is apt to be followed by sterility.

The Pima have no definite ideas as to the period of viability of the fetus. They feel it, and hence know it must be alive. They have no means of determining the sex. The tabus of a pregnant woman among the Pima do not allow her to see a sick person, because it may cause the latter's stomach to swell and perhaps cause his death. Even the husband of the pregnant woman must not visit the sick. There seems to be no idea that the sick person may have an injurious effect on the mother or her infant. Further, the pregnant woman is not allowed to eat impure things, particularly food that may have been touched by vultures or coyotes, nor must she look on anything that is regarded as bad. This does not include fresh blood. The pregnant woman takes no special precautions on account of her condition. She works as long as she is able to do so. She has no special diet until near confinement, when she eats sparingly. Most of the pregnant women have a little morning sickness, but there are also a good many who have none. Some have only slight nausea, without vomiting. The principal midwife in the tribe never knew of a case of really severe vomiting due to pregnancy.

Among the Papago also gestation is believed to last one lunar month longer in the case of a boy than in that of a girl. "There is no telling" about the sex of a child before its birth, except in the case of boys "by the long time they stay in."

With the Mohave, gestation is supposed to last regularly ten lunar months. It is believed, however, that if a new conception takes place soon after the birth of a child the subsequent fetus will grow very slowly, and the gestation may be prolonged to a whole year.

In some of the Mexican tribes the women have largely adopted the Mexican views on these points, while in others the notions of the people are much like those of our Indians. The Tepecano, for instance, believe that the period of gestation for a boy lasts nine (calendar) months, but only seven or eight for a girl. Nowhere is much reliance placed on any special sign as to the sex of the unborn.

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[a] Cushing, in W. Matthews's Ichthyophobia, *Journal of American Folk-Lore*, IX, 1898, 110. See also Mrs. M. C. Stevenson, The Zuñi Indians, *Twenty-third Annual Report of the Bureau of American Ethnology*, 296.

Among the Opata, in Sonora, the fetus is believed to breathe, air gaining access to it through the vagina. Should the latter be occluded in any manner the child would lose its breath and die. An Opata woman recently testified to this effect in a case of suspected infanticide before a court.

LABOR; MULTIPLE AND ABNORMAL BIRTHS; PLACENTA; REAPPEARANCE OF MENSTRUATION

Much has been said about the ease with which the Indian woman undergoes childbirth. From what the writer has learned and observed, and from what he knows of the subject in the case of white women, however, it is his opinion that a healthy Indian woman of normal physique, with a normal child, on the average suffers quite as much and as long as does the normal white woman under similar conditions. The differences lie in the facts that the Indian women as a rule are well built; that most of them are used to outdoor life, and are healthy, strong, and very patient, and that, as compared with the whites, a larger proportion of the children are absolutely normal. Owing largely to these same factors the puerperium in the Indian woman is often a very healthful one, and return to the ordinary mode of life is quite rapid. There is no indication of any less organic sensibility in the Indian woman, comparing her always with other women of similar social position. Nor are all the labors of Indian women easy. Dystocia is well known, and manual assistance is often needed and employed.

There is generally but little visible preparation for the event of childbirth. The woman walks about, at least within the dwelling, and does more or less work up to the time when the pains have well set in. Sometimes she is urged to walk or stand up to the last stage of labor. She then reposes in different positions on a skin, a mat, or a blanket, or on warm sand spread on the ground. Delivery takes place while the woman is squatting, or on her knees, or on hands and knees or elbows, or lying down; frequently she holds on to an attendant, or to a sash, rope, strap, or stick which is fastened somewhere near for the purpose. Ordinarily the only assistant is the mother or some other female relative of mature years, but more than one woman or person may be present. In most tribes there are older women who are reputed especially apt helpers, a sort of midwives, who are expected to aid spiritually as well as physically.

The assistance given is everywhere substantially the same, consisting mainly of pressure or kneading with the hands or with a bandage about the abdomen, the object of which is to give direct aid in the expulsion of the child. The procedure, which is not always gentle, accomplishes very probably the same result as the kneading of the uterine fundus under similar conditions by the white physician, namely, more effective uterine contractions.

Among some tribes steaming the lower part of the body is occasionally resorted to as a help to speedy delivery. Decoctions, especially that of cedar (Juniperus sec.), are drunk, particularly among the Pueblos; and there are prayers and ceremonial observances, as well as appropriate fetishes. Internal examination of the patient is resorted to only when she is in great distress. When strong manual aid is needed it is given by the husband, a brother, or a medicine-man. After birth the cord is usually cut and tied. Delivery of the placenta generally follows in a short time, on the average more promptly than among the whites.

To determine the exact progress of labor would require numerous precise personal observations impossible for the stranger to make, and information obtained through mere inquiry is necessarily unsatisfactory.

After confinement the woman remains on the skin or mat as long as exhausted or weak. The generative organs, external and internal, receive no special attention or merely superficial cleansing. Save in exceptional cases, the woman generally rises earlier than is the custom among whites; not seldom the first, but usually the second or third day; and she does not take as much care against exposure as the white woman. The period of her confinement to the house differs among the various tribes, and is a matter of purely religious custom.

There are well-authenticated instances in which an Indian woman has given birth to a child on a journey, and after a shorter or longer time has resumed travel, or where she brought forth one day and was at work the next. Similar cases, however, occur among the whites.

Among all of the tribes after childbirth the mother is dieted in different ways. This observance is partly prophylactic, partly religious.

Abnormal positions of the child are infrequent, but their occurrence is well known and dreaded among all the tribes. The same may be said of puerperal troubles, which, however, are also rare, the puerperium being freer of abnormalities and diseases than among whites. Twins are not uncommon; triplets are very rare, and are regarded as something uncanny; of more than three children at a birth none of the persons questioned had ever heard. Monstrosities are rare, but occur among all the tribes; if of a pronounced kind the child is not allowed to live.

The delivery itself is nowhere surrounded with much secrecy, and female members of the family, in some instances also male relatives and even children, may be present.

Tribal details.—Among the White Mountain Apache after childbirth the woman, unless too weak, runs about among the bushes outside the hut in order that "the blood may not clot." The first day she partakes of a little soup or gruel, but as soon as she begins to resume her customary occupations—that is, from the second day on—she may eat what she likes.

The San Carlos woman is delivered in the kneeling position, with the limbs well apart. A helping woman, kneeling or squatting behind, puts her arms about the upper part of the abdomen of the patient and presses upon the uterus. If the progress is not satisfactory, the patient has to rise and walk toward the east, then to the north, then to the west, and finally to the south. This procedure is believed to hasten delivery. Sometimes but not often there is trouble with the placenta. If it does not appear, the old woman attendant presses on the abdomen and kneads the fundus of the uterus. Only in very exceptional cases will she touch the genitals. If no other help remains, a woman especially skillful in such emergencies is called. She takes the cord between two fingers and, following its course, introduces her hand and with one finger tries to loosen the afterbirth (this was illustrated to the writer very skillfully by one of the old women), or she may introduce her hand with a little knife with which she tries to obtain a better hold on the placenta and help in tearing it away. Even with these expedients she may fail entirely. Another way is to pull on the cord and work little by little. When the cord breaks, however, there is trouble, and several women in the tribe are remembered as having suffered much or as having died from illness consequent on a retention of the placenta. External aid (kneading and pressure) is always relied upon most, internal manipulation being almost abhorrent to the people.[a] After confinement the San Carlos woman is not allowed to go about as does the White Mountain woman. She either lies quiet or, according to an old custom, there is built in the hut a little separate fire, from which, after a while, the remaining wood and ashes are taken away and the heated earth is covered with grass. The woman lies on her abdomen upon the grass and is well covered up, remaining thus for some time. This is done particularly when there is profuse hemorrhage. There is no definite number of days of seclusion. The mother is kept indoors until she feels well. A child is sometimes born in a temporary habitation or on the road, and sometimes it is impossible, from other causes, for the woman to remain indoors for any considerable length of time. For the first day or two the mother eats nothing "strong"—no beef and no salt. After four days her face and hands are washed. In eight days she is completely bathed and then can eat anything that is to be had. If the woman is not well after delivery, more care is taken with her diet. She is given only a little bread or coffee or gruel. On the other hand, if strong, she can soon eat almost everything, even with salt. She is never given any tulipi, however.

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[a] The placenta is wrapped up in an old cloth and buried or otherwise disposed of, so that no animal can get at it. Should it be eaten, it is believed that the child may not live.

When asked about the occurrence of twins in the tribe most of the San Carlos women said it was quite rare, and they could refer to no recent instance. When asked about triplets, they usually answered with a laugh, saying that they were not dogs to have so many. None of them had heard of any such occurrence in the tribe. The only instances of congenital abnormalities among the San Carlos Apache learned of by the writer were a harelip and a case of imperforate anus. When a deformity is considerable, the infant is usually allowed to die. In the tribe, however, there is a man who has no external ears, but simply an opening on each side into the head. He was born thus. No one could remember any instance of multiple breasts or limbs.

Among the Mescaleros a woman in labor kneels on the ground with her limbs separated, while another woman kneels behind her and from time to time presses on the abdomen. Old women assist in the labor. When the delivery is difficult, they give some medicine, press and knead the abdomen, and often endeavor to remove the child manually. No one except the attending woman is allowed to be present. The placenta is wrapped up and buried. After labor the woman observes no special diet and eats almost anything she desires. No fixed period for her to stay indoors was observed. One Mescalero woman is known to have had three children at a birth. One was a monster without arms and another had only one eye. Both of these were killed. This occurred about thirty-five years ago.

Among the Lipan the position of the woman in labor is on her knees with limbs well separated, aid being given by an attendant who from behind holds back her shoulders. The placenta is so disposed of that it may not be disturbed by beasts of prey. A cradle board is made when the child is four days old. The woman is not allowed to go out before four days have elapsed. The baby is shown to the sun soon after birth, but is not taken out until 2 weeks old. These old observances, however, are being slowly abandoned.

Among the Navaho generally only the old women assist, but when the childbirth is difficult one or more men may be called in, who aid the woman in labor by encircling her abdomen with their arms, endeavoring to hasten the birth. A medicine-man is occasionally called in to aid with pressure and also with "medicine" and incantations.[a]

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[a] A curious case was reported to the writer by Doctor McKee, formerly physician to the Hopi and Navaho at Keams canyon. She was called to attend a Navaho woman who thought that confinement was delayed. On arriving she found the patient at about the end of the seventh month of pregnancy and with absolutely no signs of approaching labor. The doctor was informed that, according to the calculation of the woman and her relatives, the time for the confinement had passed and for two days the men in the family had been aiding the woman to be delivered by pressing her abdomen. Fortunately the manipulation had not been violent enough to injure either the mother or her infant. The child was born nearly two months later.

Especially reliable information was obtained in this line among the Pima from an old midwife known as Mary, sister of the chief, Antonio Azul. She comes from a family of chiefs and learned her vocation from her mother and sister. She is in every way comparable to a country midwife among the whites, and is called on to aid in most of the confinements in her neighborhood. According to this woman the preparations for labor among the Pima are very simple. The woman at term is directed to walk as long as possible, as the delivery will be easier than if she takes to her bed on the approach of the first pains. When walking becomes impossible she is placed in a sitting posture on a little bedding or merely a cloth. If the progress is then satisfactory she is let alone until the child is born. In some cases the patient sits on the ground with the knees drawn up, and inclining slightly backward on a helping woman, who sits behind her. Occasionally a depression is made in the ground in front of the woman to receive the baby. The practice differs with different families. If the birth does not take place promptly, the midwife squats or kneels, takes the woman on her lap, puts her arms around her abdomen, and bears down with all her strength. When the patient writhes a little, she shakes her moderately from side to side, and if satisfactory progress is not made the midwife goes in front while the husband from behind presses on the abdomen of his wife with all his strength. The midwife never examines the patient internally, and she does not pull on the child, as this would be contrary to custom. My informant never had a case where success did not attend the expedients mentioned, although the time might be long. If the placenta does not follow the birth directly or within a short time, as it usually does, the cord is tied and the midwife commences pressing on the uterus and kneading it—a practice which is usually successful. She does not pull on the cord or introduce her hand. In one instance a peculiar treatment for retained placenta was administered by a female helper. The confined woman was made to pull herself up on a rope suspended from above. When she was nearly erect, she was told to open her mouth and into this the midwife quickly introduced, as far as she could, one of her fingers. The object was to induce a violent effort at vomiting while the woman was in that peculiar position, with the muscles of the upper part of her body, as well as those of the abdomen, well contracted. The effort, whether by inducing great and sudden pressure on the uterus or a reflex relaxation of the os uteri, succeeded, the afterbirth being promptly expelled. The placenta is buried by the women.

Attentions to the Pima mother after labor are also very simple. If she is in good health and seems well, as is often the case, she is left entirely to herself. For the first few hours she receives no food and is not washed. After that she can have a little food when she likes. If she is weak or inclined to faint, she has to be fed at once and is given warm soup made from flour and water. Formerly she was not washed until sixteen days after labor, but now the customary time is four days, provided there is no danger of her catching cold; but meanwhile she cleanses herself somewhat with dry cloths. No medicine is given, except in cases where the woman feels ill.

Formerly a Pima woman after delivery tabued salt for eight days or more. At present there is no observance of any special diet, except that for the first day or two she avoids whatever is considered "strong."

Accidents to a mother after delivery are not frequent. When there is too much milk, the midwife relieves the pressure with her hands. The mother is seldom able to nurse her babe at once; often the milk does not appear for two and occasionally for even three or four days. Meanwhile the child is given some simple diet. The writer's informant never knew of the birth of a monster. She knew, however, of an infant without arms born to a Pima woman; it was not allowed to live. Her own grandson shows a congenital defect of finger nails; so small an abnormality would not be considered sufficient cause for disposing of the child.

Only one case of triplets had occurred in the tribe within the recollection of the persons interviewed. In this case all three children lived to advanced age and died within recent years.

No case of deformed pelvis was known in the tribe.

Difficult and long labor, the old Pima think, is due largely to the fact that women do not now always make sufficient effort to hasten birth. Difficulties are especially noticed in the women who have adopted to the greatest extent the ways of the whites.

Among the northern Papago assistance in delivery is given by older female relatives. During the later stages of the labor the patient, who sits down on the ground, aids delivery by raising herself by means of a cord fixed to the wall or ceiling. After confinement the Papago woman in some localities is expected to stay indoors for two or three weeks, a custom probably of Spanish derivation. Several years ago a Papago woman at Sacaton had a retention of the placenta. When all ordinary means had failed, the white agency doctor was called, but the woman refused to have the afterbirth removed manually or with the aid of instruments, and died some days afterwards.

Among the Maricopa the position in labor and the ordinary usages connected with delivery are like those among the Pima; no depression, however, is made in the ground in front of the patient, as is done at times among the latter.

The Hopi woman, if her health is good, goes about her lighter duties to the last and, if no complications develop, takes actual rest for a day or two only after confinement. She is delivered in most cases in a kneeling or squatting position, on sand covered with rags. She stays at least four days indoors, in obedience to a religious custom, and observes a stipulated diet.[a]

Methods of delivery in the Rio Grande pueblos and among the Zuñi are given by Mrs. M. C. Stevenson in The Sia (*Eleventh Annual Report of the Bureau of Ethnology*, 132–143, and The Zuñi Indians (*Twenty-third Annual Report* of same Bureau, 297 et seq.).

In an ordinary confinement among the Mohave the little help that is necessary is given by the older women among the relatives or acquaintances. When the labor is difficult a woman is called in "who knows how to help." There are several such women in the tribe, and they have to be paid like the medicine-men. Most labors are completed within half a day; some last up to two days. It is believed by Mohave mothers that more pain is suffered in the case of a girl, a boy being easier to deliver. The mother eats nothing the first day, drinking only warm water or a little soup. With her first child the mother abstains from meat and salt for one month. With successive children this time of abstinence is reduced to three or two weeks.[b]

There is but little preparation for parturition among the Tarahumare, and the labor usually does not last many hours, though there are exceptions. The woman ties a sash about her waist, and the tightening of this, which may be repeated, is supposed to aid the delivery. Unless suffering from some accident the mother leaves the dwelling within a few hours to wash herself.[c]

Among the Opata labor lasts usually from eight to eighteen hours, but instances are known of duration of but a few minutes, while, on the other hand, in a small number of cases several days elapsed between the first occurrence of pains and the delivery, without prolonged interruption in the pains. There are but few cases in which labor is atypical and really difficult. Among nearly 50 cases in which he assisted, Doctor Alderman, the principal informant of the writer among this tribe, had but one feet presentation. In labor the woman usually kneels or squats with knees apart. She is attended by her nearest female relative, but other women and even men and children may be present. The event is not considered one requiring great secrecy. A light shawl is tied about the woman's abdomen, over the fundus, and tightened as much as "two women can draw," or a large pad of cloth is laid over the uterus and bound there tightly with a bandage. During the pains (at any period of the labor) a helping woman takes the patient, who has assumed a kind of sitting posture, by the hips and shakes her quite forcibly to and fro. This manipulation is repeated at intervals until the child is born. Sometimes two women, one on each side, alternate in pressing strongly on the fundus. The placental portion of the cord, after severing, must be fastened in some way to the mother's thigh, otherwise, it is believed, it might recede and be lost within, when the mother could not be delivered of it and the afterbirth. The placenta, however, seldom causes trouble.[a] The toilet of the mother is restricted to drying with pieces of cloth, washing being delayed until the period of the "dieta" has passed.

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[a] At Oraibi, according to H. R. Voth, the parturient woman assumes a kneeling position with both hands on the floor. At the moment of birth the woman is usually left alone. When the child is delivered the mother chews juniper twigs and some warm corn gruel is given her. If the delivery of the placenta is retarded, the attending woman gently presses and kneads the abdomen. If that fails, she resorts to a little broom (or brush) made of stiff grass, and with this gently strikes the hips and back of the patient, at the same time pulling lightly on the cord. The mother is not allowed to eat or drink anything cold throughout the lying-in period. Mr. Voth gives also, besides other details, an interesting account of aid in difficult labor and in a case of retained placenta. A woman was in labor for two days and a night and was exhausted. Directed by an Indian called to help, the husband of the patient knelt, placing both of his hands on the floor. The woman was then laid across his back, but somewhat to one side so that a downward pressure was applied to her abdomen. At the same time the helper applied gentle pressure with his hands on both sides of the abdomen. The child (dead) was expelled in a very short time and the woman's life saved. In another case where the placenta was retained, manipulation and pressure were employed on the uterus, an old woman meanwhile pulling gently on the cord.—See H. R. Voth, Oraibi Natal Customs and Ceremonies, in *Field Columbian Museum Publications*, Anthropological series, VI, no. 2, Chicago, 1905.

[b] The placenta and blood clots are placed in a cloth and buried by the women in some out-of-the-way spot, although there appears to be no superstition connected with the act.

[c] The placenta is buried deep and a stone is laid over it, so that dogs may not eat it.

After delivery the woman usually remains four or five days in bed, but she observes a diet for forty days, during which time she must not wash or comb her hair. Under the "dieta" chile, beans, fresh meats, and certain other articles may not be eaten. The woman subsists solely on a little dried meat, chicken, eggs, and a few other simple nonstimulating foods, with but a small allowance of salt. It is probable that this limited diet is in part, though not wholly, the result of Mexican influence.

Among the Tepecano parturition is generally accomplished with the aid of one or more related or friendly older women. There are no professional helpers and the woman in childbirth is not secluded from her family or friends. The ordinary labor lasts about twelve hours, but there are not a few cases in which the duration is less and some in which it is greater. The woman is delivered squatting on her knees and toes, or on knees, toes, and hands, with the lower limbs well separated. In difficult labor the husband or brother or helping woman encircles the patient's abdomen from behind with the arms and tries to expel the child by pressure, which is continued without intermission as long as possible. If this treatment does not accomplish its purpose, a medicine-man is called and proceeds with the woman in labor much as with any other patient; that is, prays and exerts his magical powers in his wonted way, but gives her at the same time a decoction of "herba buena" or "rosa de castilla," and may himself try abdominal pressure or kneading. The abdomen of the delivered woman is bound with the ordinary broad sash, a custom probably acquired from the Mexicans. The woman is urged to remain in bed as long as possible, and she generally stays indoors eight to fifteen and even thirty days.

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[a] It is buried with no special care or secrecy.

The Huichol women in labor are assisted by older women, as among other Indians. As soon as able afterwards they wash themselves all over.

Among the Nahua, most of the Tarasco, and the Tlahuiltec the observances as to help, cleanliness, diet, and other matters of medical interest concerning the woman before, during, and following delivery are more or less modified by Mexican usages.

The primipara receives everywhere a special attention and is more bound than a multipara to observe diet and other customs.

In order to obtain more exact information respecting the duration of labor and other matters relating to childbirth, the writer questioned directly a number of Apache and Pima mothers. It was found almost invariably that after proper introduction and explanation as to the inquiries to be made the woman was willing enough to give all the information at her command, but in many cases her remembrance of long-past events was so imperfect that a portion of the data could not be utilized. The best answers were those relating to the length of labor (it being possible in almost every instance to learn the approximate time of the day or night when the pains began and when the infant was born) and those relating to the last child.

The results, so far as the duration of labor is concerned, show considerable individual variation in both series; yet it will be noted from the table below that there is in both series a tendency toward groupings of frequencies, which are quite similar in the two tribes. In nearly 29 per cent of the 35 tabulated cases among the Apache and 23.5 per cent of those among the Pima, the labor lasted only two hours or less; labor of between seven and twelve hours' duration among the Apache (31 per cent), and seven to ten hours among the Pima (32 per cent) forms the second and largest group; while the third group embraces the prolonged labors, of more than one day's duration (17 per cent among the Apache and 17.6 per cent among the Pima).

Duration of labor[a]

San Carlos Apache.			Pima.		
Duration.	Cases.	Remarks.	Duration.	Cases.	Remarks.
1 hour	3	10=28.6 per cent.	1 hour	4	8=23.5 per cent.
1½ hours	3		1 to 2 hours	1	
2 hours	4		2 hours	3	
2 to 3 hours	1		3 hours	2	
4 hours	2		4 hours	2	
5 hours	1		5 hours	1	
6 hours	1		6 hours	3	11=32.4 per cent.
7 hours	3	11=31.4 per cent.	6 to 7 hours	1	
8 hours	3		7 hours	2	
8 to 9 hours	1		8 hours	3	
10 hours	2		10 hours	2	
12 hours	2		11 hours	1	
15 hours	1		12 hours	1	
18 hours	1		20 hours	1	
22 hours	1		23 hours	1	
24 hours	1	6=17.1 per cent.	24 hours	2	6=17.6 per cent.
2 days and 1 night	1		3 days and 2 nights	2	
2 days and 2 nights	2		4 days and 2 nights	2	
4 days and 3 nights	1				
7 days	1				

[a] More detail tables will be found at the end of the chapter.

In the majority of the cases the labor with the first child was prolonged; there is, however, but little uniformity as to duration in this or other series of births (see detail table). In eight families where records of more than one child, including the first, were obtained, the labor in the first case was longer than in the second in four, about equal in one, and shorter in three instances. The longest labor (seven days) occurred with the third child; the two next longest (each four days), one with a first and one with a second child.

The delivery of the placenta took place in all but two instances within less than one-half hour after the birth of the child. In the majority of the cases the interval was very short—one or two pains—"a very short while," "a short while." In one case, however (first child), the afterbirth was delivered only after a delay of four hours, and in another (fourth child) after five hours. There is no suggestion of any relation between the promptness of the delivery of the child and that of the placenta, or between this and the order of birth of the child (first, second, etc.).

Another point in the inquiry may be considered in this place, namely, the reestablishment of the menses after childbirth. There were collected only 21 reliable records of this class, but there are in addition a number of others of negative nature, showing the time (age of the infant) at which menstruation has not yet reappeared. The data, given in a table below,[a] show much irregularity. While in individual instances the function was reestablished as early as the fourth or the fifth month, in numerous cases it did not manifest itself again until after the tenth or twelfth month, or even later. In the same woman the regularity is probably greater (though there are exceptions), but accurate records are lacking.

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[a] See also the details at the end of this chapter.

Reappearance of menstruation after childbirth

Tribe.	Cases.	Tribe.	Cases.
SAN CARLOS APACHE.		PIMA.	
Menstruated for the first time after—		Menstruated for the first time after—	
6 months	2	3 months	1
7 months	3	4 months	1
8 months	2	6 months	1
10 months	1	11 months	1
12 months	1	12 months	2
13 months	1	14 months	2
14 months	2		
16 months	1		
Has not menstruated yet after—		Has not menstruated yet after—	
4 months	1	5 months 16 days	1
6 months 12 days	1	6 months 20 days	1
7 months	1	7 months	1
7 months 20 days	1	7 months 17 days	1
8 months 16 days	1	8 months 15 days	1
9 months	1	8 months 24 days	1
11 months 10 days	1	about 16 months	1
11 months 20 days	1		
12 months	1		
12 months 15 days	1		
15 months	1		

The detailed data relating to individual labor cases and kindred subjects are as follows:

DETAIL TABLES

Obstetric notes—Lactation; Menses

SAN CARLOS APACHE: INDIVIDUAL CHILDREN

No.	Which child.	Sex.	Duration of labor.	Placenta expelled when—	Could begin to nurse—	Infant given meantime—	Reappearance of menstruation.		Miscellaneous notes.
							Months after delivery.	If not yet, age of the child.	
1	First	Male	5 hours	A few minutes	After 16 hours				
2	do	do	2 hours	Very soon	After 1 day			11 months 10 days	
3	do	do	10 hours				7		
4	do	Female	8 hours	After 4 hours					Old attending woman, when the placenta would not come, took the cord between her second and middle fingers and followed it up until she reached the placenta, which she removed with her fingers.
5	do	do	22 hours	Very soon	After several days	Coffee		8 months 16 days	Had but little milk for fully 2 months.
6	do	do	4 days and 3 nights.	A few moments after child.	Had milk before delivery.			1 month 8 days	Labor hard; being sick, the woman did not nurse the child until after 2 days.
7	do	Male	12 hours	A few minutes	After 1 day				
8	do	Female	1 to 2 hours	do	Ninth day	Cow's milk			
9	do	Male	8 hours						
10	do	Female	2 days and 1 night.						
11	do	do	1 hour						
12	do	do	24 hours						
13	Second	Male	12 hours	Less than ½ hour	After a night			1 month	After first child, menstruated in 1 year.
14	do	Female	1 hour	A few minutes	After 1 day		27 days		No new pregnancy. Hardly old enough for menopause.
15	do	Male	18 hours	do	After 18 hours		10		
16	do	do	4 hours	Soon	Ninth day	Cow's milk			

17	do	Female	8 to 9 hours						
18	do	Male	7 hours						
19	do	do	2 hours						
20	do	do	1½ hours						
21	do	do	2 days and 2 nights.						Mother Mohave; labor was very severe; nearly died; mother well formed; head presentation; child was large; remained partially paralyzed.
22	Third	do	10 hours					1 month 14 days	
23	do	Female	1 to 1½ hours	A few minutes	After 36 hours			7 month	Labor with second child, 8 p. m. to 10 or 10.30 p. m.
24	do	Male	7 days				No menses before next pregnancy, in 15 months.		Labor severe, with intermissions (see "In families," next table).
25	do	do	7 hours				8		
26	do	do	2 to 3 hours				6		
27	Fourth	do	4 hours				13		
28	do	do	8 hours	A few minutes	After 9 days	Cow's milk		9 months	
29	do	do	2 days and 2 nights.	Less than ½ hour	After 3 days	Thin soup of flour and water, a little mescal juice with water.	7		Labor long, but not severe.
30	do	Female	15 hours	About 5 hours				11 months 20 days	Helping woman used kneading to aid delivery of placenta.
31	Fifth	do	2 hours					7 months 20 days	
32	Eighth	do	6 hours	Just after child					Once nursed two of her children at same time; older one did not want to stop.
33	Ninth	Male	About 7 hours	Within a few minutes.					
34	Tenth	do	1 hour	In a few minutes	Within ½ day			6 months 12 days	
35	do	do	2 hours					4 months	Labor with ninth child from morning till night.

DETAIL TABLES—Continued

Obstetric notes—Lactation; Menses—Continued

SAN CARLOS APACHE: INDIVIDUAL CHILDREN—Continued

ADDITIONAL DATA AS TO REAPPEARANCE OF MENSTRUATION AFTER THE BIRTH OF A CHILD

No.	Which child.	Sex.	Duration of labor.	Placenta expelled when—	Could begin to nurse—	Infant given meantime—	Reappearance of menstruation.		Miscellaneous notes.
							Months after delivery.	If not yet, age of the child.	
36							7		
37								1 year 15 days	
38							6		
39							14		
40							16		
41							a 14		
42							12		
43							b 8		
44								1 year	

SAN CARLOS APACHE: BY FAMILIES

No.	Which child.	Sex.	Duration of labor.	Placenta expelled when—	Could begin to nurse—	Infant given meantime—	Months after delivery.	If not yet, age of the child.	Miscellaneous notes.
A 9	First	Female	1 to 2 hours						Placenta always came soon; milk never before ninth or tenth day. Child fed always on cow's milk.
16	Second	Male	4 hours						
24	Third	do	7 days				No menses before next pregnancy, in 15 months.		Labor severe; intermissions, but not very long; toward last became unconscious; did not know when child was born; child was large, but position normal.
28	Fourth	do	8 hours	A few minutes	After 9 days	Cow's milk		9 months	Staid indoors 4 days; worked but little until after 8 days.

B	7	First	do	12 hours	do	After 1 day				[illegible]
	15	Second	do	18 hours	do	After 18 hours		10		
C	32	Eighth	Female	6 hours	Just after child					
	33	Ninth	Male	About 7 hours	In a few minutes					
	34	Tenth	do	1 hour	do	Within ½ day			6 months 12 days	
D	9	First	do	8 hours						
	17	Second	Female	8 to 9 hours						
	25	Third	Male	7 hours				8		
E	10	First	Female	2 days						
	18	Second	Male	7 hours						
	20	Third	do	2 to 3 hours				6		

PIMA: INDIVIDUAL CHILDREN

1	First	Male	10 hours		After 3 days	Condensed milk			
2	do	Female	6 hours	A few minutes	Very soon—had milk before labor set in.				
3	do	Male	5 hours	do	Fourth day	Cow's milk	4		
4	do	do	8 hours	do			6		
5	do	Female	3 days and 2 nights.	¼ hour	Sixth day	Condensed milk	12		Labor long, but not very severe.
6	do	Male	4 days and 3 nights.						Labor long, exhausting; was sick 2 weeks after.
7	Second	do	Less than 1 hour.	Very soon	In 6 hours				
8	do	Female	About 1 hour	do					
9	do	do	3 hours	Less than ½ hour	Third day				
10	do	do	6 hours	A few minutes			14		
11	do	Male	2 hours						
12	do	do	4 hours	A few minutes	Fourth day	Nursed by another woman.	3		

[a] When child began to walk; about 14 months.

[b] Child had all front teeth already; about 8 months.

DETAIL TABLES—Continued

Obstetric notes—Lactation; Menses—Continued

PIMA: INDIVIDUAL CHILDREN—Continued

No.	Which child.	Sex.	Duration of labor.	Placenta expelled when—	Could begin to nurse—	Infant given meantime—	Reappearance of menstruation.		Miscellaneous notes.
							Months after delivery.	If not yet, age of the child.	
13	Second	Female	3 hours	Just after the child.	Within 3 hours		12		
14	Third	Male	23 hours		After 1 day			2 months 2 days	
15	do	Female	11 hours		Very soon (nursed former child up to labor).			5 days	Could not go about for 3 days; now all right.
16	do	do	1 hour	Within 5 minutes	10 hours		14		
17	do	do	10 hours	5 minutes	Fifth day	Cow's milk		8 months 15 days	With her second child placenta remained one-half day.
18	do	Male	20 hours	About 15 minutes	28 hours	Condensed milk		1 month	
19	do	Female	6 hours	Less than ½ hour	15 hours				
20	do	Male	12 hours	10 minutes				3 months 5 days	
21	do	Female	4 days	About 10 minutes	Sixth day	Condensed milk		6 months 20 days	Labor long, but not very severe; breasts "dry" till sixth day.
22	do	do	1 to 2 hours	About 15 minutes	At end of second day (40 hours).	Cow's milk		5 months 16 days	
23	do		24 hours	Less than ½ hour			(*a*)	1 year 10 months 5 days	Twins; new pregnancy about 6 months.
24	Fourth								
25	do	Male	1 hour	Almost at once	20 hours	A little warm water.		7 months	
26	do	do	8 hours	Very soon	36 hours	Weak black coffee		8 months 24 days	

27	....do...	Female .	2 hours.......	....	Very soon; had milk when child was born (not nursing a previous child).	....	....		
28	....do...	Male....	.....do........	Less than 10 minutes.	20 hours..........	....	11	....	
29	....do...	....do...	6 to 7 hours...	5 to 10 minutes...	After 4 days......	Cow's milk.......	....	....	Always 3 to 4 days before flow of milk is established; placenta always came out in less than 10 minutes.
30	....do...	....do...	8 hours.......	Very soon........	After 1 day.......	....	....	18 days..............	
31	....do...	Female .	4 hours.......	A few minutes....	12 hours..........	....	....	....	Had not enough milk till after 3 days.
32	Fifth...	Male....	7 hours.......	.....do............	Fourth day.......	Cow's milk.......	....	7 months 17 days..	
33	Sixth...	Female .	.....do........	.....do............	Same day (in about 10 hours).	....	....	....	
34	....do...	....do...	3 days and 2 nights	....	After 4 days......	Condensed milk ..	....	....	Labor long, but not severe; thus with all her children; nursing also delayed 3 to 4 days with all; placenta came soon with all, within ½ hour or less.
35	Ninth ..	....do...	2 hours.......	....	After 2 days......	....	....	2 months 20 days..	
36	....do...	Male....	5 hours.......	....	Verysoon(nursed preceding child until labor).	....	....	....	

PIMA: BY FAMILIES

A 5	First...	Female .	3 days........	Within ¼ hour....	Sixth day.........	Condensed milk ..	12	....	Labor long, but not very severe with every child (3) she had; breasts with every child "dry" until the sixth day.
21	Third...	....do...	4 days........	About 10 minutes.	.....do............	.....do............	....	6 months 20 days...	
3	First...	Male....	5 hours.......	A few minutes....	Fourth day.......	Cow's milk.......	4	....	
B 11	Second..	....do...	4 hours.......	.....do............	.....do............	Nursed by another woman.	3	....	

a New pregnancy.

DETAIL TABLES—Continued

Obstetric notes—Lactation; Menses—Continued

PIMA, BY FAMILIES—Continued

No.		Which child.	Sex.	Duration of labor.	Placenta expelled when.	Could begin to nurse.	Infant given meantime.	Reappearance of menstruation.		Miscellaneous notes.
								Months after delivery.	If not yet, age of the child.	
C	6	First	Female	4 days						Had not enough milk until the third day; placenta with all within less than one half hour after delivery of child; was sick two weeks after the first labor
	9	Second	do	3 hours	....					
	10	Third	Male	6 hours		15 hours				
D	4	First	do	8 hours	Within a few minutes.			6		
	10	Second	Female	6 hours	do			14		
	20	Third	Male	12 hours	Within 10 minutes				3 months 5 days	
E	11	Second	do	2 hours						
	22	Third	Female	1 to 2 hours	About 15 minutes	At end of second day (about 40 hours).	Cow's milk		5 months 10 days	
F	13	Second	do	3 hours	Just after child	Within 3 hours		12		
	18	Third	Male	20 hours	About 15 minutes	28 hours	Condensed milk		1 month	
G	23	do	Female	24 hours	Both within less than ½ hour.			(a)	1 year 10 months 5 days.	Twins.
	24	Fourth	do							

a New pregnancy.

EARLY ATTENTION TO THE INFANT; NURSING AND FEEDING

The treatment of the newborn child among the Indians herein dealt with, so far as it is of physiological or medical interest, is everywhere quite simple. After being cut and tied, the cord is wrapped in a piece of fabric or, in some instances, simply laid upon the abdomen. A bandage is sometimes placed about the child's abdomen. The infant is taken in charge by the grandmother or another old woman, and is then washed or rubbed, in some tribes given a taste of a sacred food or drink, and laid to sleep at first on bedding and later on a cradle board. As soon as the mother's flow of milk commences the child is nursed. No difference was found anywhere between the manner of nursing or feeding the male and the female infant.

With the Apache newborn infant the cord is usually tied an inch or a little more from the body and then cut about the same distance farther away. But little or no wrapping is used. In four or five days, if all goes well, the cord falls off. The child is then cleansed somewhat or washed with warm water.

About San Carlos, in families in which the old customs still prevail, the child receives its first thorough bathing after four days have passed and is then taken out of doors for the first time, this course being pursued especially with the first child. A woman recently confined, on being asked why she did not wash or take out her baby until after four days, could give no reason other than that in case of the first child the old folk make the mother wait so long. One San Carlos woman told the writer that her babies when born were washed with warm water as soon as it could be made ready. In some instances the children were washed by a woman attendant and in others by the mother herself. At first the child is laid in a warm bed improvised from old clothing, but it is put into the cradle as soon as the latter is made, usually during the first or second day. In no case do the women put anything into the water in which they wash the babies.

A Tonto Apache mother of nine children said that her infants were washed with warm water soon after birth. Among this tribe the cord is tied with a clean string about an inch from the body and covered with some of the "cotton" and powder of the root of a certain plant (*me-tci-da-il-tso*, Perezia wrightii), which make it heal quickly. If soreness develops more of the same root is applied. In a day or two a cradle board is made on which the babe is placed. Among the San Carlos people ashes or clay are never used in cleaning the newborn child. With the more careful mothers infants are washed daily, or nearly every day.

Among the Mescalero Apache the cord is tied about 1½ or 2 inches from the body and then cut. The cradle board is made after the birth of the child, which is laid thereon the second or third day.

Among the Jicarilla Apache the cord is tied and cut much as among the whites. It is then wrapped in rags and the child is incased in a goatskin. After four days the infant is taken out of the skin and given its first bath.

Among the Lipan the cord is tied about 1½ inches, and is cut about 4 inches, from the body. Ordinarily nothing is applied to the end, but should it become sore horse excrement is burned and used as a remedy. When the cord is attended to and the child is cleansed somewhat with warm water, it is held in turn to the four points of the compass; then it is wrapped in some old soft cloth and laid on a skin or bedding spread over weeds known as *tlo-til-spai*. In former times the toilet of the newborn infant, after the cord was tied, consisted of a simple washing with warm water, which was brought in the horn of a buffalo. The baby's bed was always made over some of the *tlo-til-spai*. The mother was not allowed to nurse the infant for at least two days.

The Navaho tie the cord about 1½ inches from the body and cut it at a somewhat greater distance, much as among the Apache; the remaining part of the cord is usually allowed (at least in some parts of the reservation) to lie on the skin without any covering, unless soreness is apparent.

Among the Hopi the cord is cut and tied. The child is washed with a little luke-warm water or soapsuds (made from the soap-weed) and then the skin is rubbed all over with wood ashes. Occasionally a whitish clay is also used for the rubbing.[a] The washing and rubbing are repeated daily until the skin is sufficiently clean. This is the practice in a few other pueblos also. At Laguna, according to the writer's informant in the village, only the clay is used. The Zuñi cut and tie the cord and use soapsuds and ashes, in a manner similar to the Hopi.[b]

The Pima generally cut the cord about 1½ inches from the body (the women indicate the breadth of three fingers), and then tie it. Further attentions to the infant are as follows: It is carefully handled, washed with warm water as soon as possible, wrapped in something warm, and placed on a little bedding on the ground or in a bed. If a cradle is obtained or made, which is not frequently the case, this is used for several days only until the baby is stronger, after which the usual swing is prepared for it. To prevent soreness of the cord the Pima apply powdered bark of the mesquite, finely ground red pigment, probably ocher, pulverized dry grease wood (Covillea tridentata) mixed with fine dry mud from the river, or the dry spores of a little puffball fungus, *a-te* ("carries-earth-on-head," Tylostoma). Occasionally the navel becomes sore, but heals under these applications. A band is put around the child's abdomen, the extremity of the cord is laid on it, and another band then passed over it. If the mother can not nurse the infant soon, it is fed on a little pinole and water or diluted milk. No teas or medicines are given and no clay or ashes is used.

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[a] Compare H. R. Voth, Oraibi Natal Customs and Ceremonies, *Field Columbian Museum Publications*, Anthropological series, VI. no. 2. Chicago, 1905.

[b] Compare Mrs. M. C. Stevenson's accounts in publications of the Bureau of American Ethnology.

Among the Papago some tie the cord, others cut it within 2 inches of the body and then apply live coals or a burning stick to stop the bleeding. In the latter case there is no tying. The northern Papago have no cradle boards. After being washed, the newborn child is put on a bed made of blankets or cloth and kept there until two or three weeks old. After that it is put into the hammock, which is like that used among the Pima.[a]

Among the Maricopa the cord is cut and tied. Cradle boards, much like those found among the Apache, are in general use in this tribe.

Among the Mohave the cord is squeezed out so that "no blood remains inside," and then tied and cut off about 1½ or 2 inches from the abdomen. It is covered or wrapped a little and generally falls off in a few days without trouble. The child is washed in warm water as soon as possible and is then rubbed with hot sand. There is no rubbing with ashes.

Among the Tarahumare the medicine-man "cures" the cord: after cutting the cord he ties it, and applies a covering of *palo santo*. The body of the newborn infant is rubbed with sour liquid called "mancha."

Among the Opata the cord is tied with a piece of calico or cloth, about 6 to 8 inches from the body, and is then cut. A rag is wrapped around the cord, which is allowed to fall down between the legs, after being further protected by a bandage. There is no washing. When a child is born the common custom is to wipe it with a dry cloth. As soon as the child is dressed it is applied to the breast. If it does not nurse it is taken away and given manzanilla (camomile) tea. In many cases after the child receives the first attentions its head is thrown back, or it is held up by the feet, and the midwife applies the ball of the thumb to the roof of the mouth, pressing it up with considerable force. This treatment is called "palidar" (forcing up the palate); it is for the purpose of raising the "mollera" or "mojera" (anterior fontanel). Falling of the mojera is supposed to be a very common complaint of childhood, and sometimes older people also are afflicted with the same trouble.

Among most of the remaining Mexican tribes opportunities to obtain details on the various points under consideration were lacking.

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[a] The name of the babe is selected by an old man, so that the child may live as long as the latter.

The nursing[a] of the infant presents one characteristic feature, found among all the tribes visited: It is generally prolonged much beyond the period customary among the whites. Nursing is begun from within a few hours to several days after confinement, according to the flow of milk, and, unless a new pregnancy intervenes, the infant is not wholly weaned until 2, 3, or even 4 or more years old. The reasons usually assigned for this custom are that "it is good for the infant," "it makes the child strong and healthy," "it wants it," and "does not want to give up." There are rare instances in which a mother nurses the newly arrived infant as well as the last preceding child. The infant does not live exclusively, however, on the mother's milk, except during the first three to eight months; after this stage, which differs in duration with the various tribes and with circumstances, it receives in addition more or less of the food forming the diet of the mother.

The Indian woman, particularly in the uncivilized tribes, has generally breasts of but moderate size, which produce a fair but not an unusual quantity of milk. A few instances were learned of in every tribe in which the secretion was insufficient, but such cases are rarer than among the whites of the larger cities. When the child can not be nursed by the mother recourse is had to goat's or cow's milk, it may be fed on what the people consider light diet, or another woman may nurse it. When a new pregnancy supervenes nursing is usually stopped, although, as mentioned above, there are exceptions to this custom. After they get teeth and run about some children wean spontaneously; in other cases the woman must absent herself for a time or apply some substance to her nipples, the bad taste of which does away with the child's desire to nurse. In some of the tribes included in the writer's researches the beginning of nursing is purposely somewhat delayed on account of peculiar notions of the people.

Details.—For the first five or six months the Apache baby gets only mother's milk; later on it receives a little food of any kind eaten by the mother. The nursing is continued until after the child walks, unless there is a new pregnancy; but even the latter does not always cause an interruption. The ordinary method of weaning a child is to put a little red pepper on the nipples. If the mother has milk very soon after confinement, she begins to nurse the baby when it commences to cry; in some cases, however, she delays "until the baby's mouth gets all clean." If milk does not appear promptly, the child gets nothing for about a day, and it is then fed on milk or something else that is not "strong." The results of special inquiry as to the appearance in different women of milk sufficient for nursing and the substances on which the child is fed when lactation is delayed are here summarized:[a]

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[a] See also notes on pp. 66 et seq.

San Carlos Apache

Woman could begin to nurse after birth of child—	Child fed meantime on—
One very soon, had milk before delivery	——
One within one-half day (about 6 hours)	——
One after a night (about 10 hours)	——
One after 16 hours	——
One after 18 hours	——
Three after 24 hours	——
One after 36 hours	——
One after 3 days	Thin soup of flour and water and a little mescal juice with water.
One after several days	Weak coffee.
Three (one mother) ninth to tenth day	Cow's milk.

It happens only very rarely that an Apache woman after delivery is permanently without milk or with but little milk. In such a case, or if the mother dies, a nursing woman among her relatives helps in caring for the baby, or it is brought up on fresh cow's milk or on condensed milk and other liquid diet. The nursing is especially prolonged when the child has been sick or if it is weak. The Apache women do not continue to nurse children for long periods with the aim of preventing by this means new conceptions. If a nursing woman becomes pregnant anew, in many instances she does not stop nursing. A few nurse the last preceding baby until the new one is born, and rarely a mother nurses both children at the same time. The flow of milk does not seem to stop because of pregnancy.

Among the San Carlos people feeding begins generally about the time the baby commences to sit up (after the seventh month). At first the child usually gets something "light," as coffee, milk, soup, crackers, tortilla, or fruit. One of the women said that she "would not think of giving the baby anything solid to eat before it could chew." When the child begins to eat, however, it gets everything it desires of what can be provided, including even candy. The earliest case of additional feeding of the nursing infant was recorded among these Apache in a girl of 8½ months, but was almost the rule among older children (see details in Appendix).

Some of the women among the Mescalero Apache do not begin to nurse the child until two days after it is born and is "cleaned out."

Among the Hopi a boy was pointed out to the writer who, though he must have been nearly 5 years old, was still occasionally nursing.

The Zuñi infant begins usually to receive articles of diet other than the mother's milk after it is 4 months old.

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[a] From the detail table with the chapter on Labor, pp. 66 et seq.

Among the Pima women detailed inquiry as to the appearance of sufficient milk and the feeding of infants pending its appearance was made as among the San Carlos Apache, with the following result:

Pima.

Women could begin to nurse after birth of child—	Child fed meantime on—
Two at once; nursed older child up to the time of labor	——
Two at once, had milk before delivery	——
One after 3 hours	——
One after 6 hours	——
Two after 10 hours	——
One after 12 hours	——
One after 15 hours	——
One after 20 hours	A little warm water.
One after 20 hours	——
Two after 1 day (24 hours)	——
One after 28 hours	Cow's milk.
One after 36 hours	Weak black coffee.
One after 40 hours	Cow's milk.
One after 2 days (48 hours)	(?)
One after 3 days	(?)
One after 3 days	Condensed milk.
One after 4 days	Cow's milk.
One after 4 days	do.
One after 4 days	Nursed by another.
One after 4 days	Cow's milk.
One after 4 days	Condensed milk.
One after 5 days	Cow's milk.
One after 6 days	Condensed milk.
One after 6 days	do.

Cases in which three or more days elapsed before the mother could nurse the child were remarkably numerous. The author suspected that, especially because of the frequent occurrence of the number four, in some cases the belated nursing was due to observances connected with that number, but this was always denied by the women.

Some of the Pima feed the child on fruit and other things from the time it is about 4 or 5 months old. Occasionally they even let it suck a piece of meat. The youngest of the children examined who were fed in addition to being nursed were a boy of 7½ months, fed since he was about 4½ months of age, and a girl of 7 months and 6 days, fed since she was 6½ months old (for details see Appendix). A very remarkable authentic case of prolonged nursing was met with in this tribe. The present teacher at Casa Blanca, a full-blood Pima, was nursed till he was 7 years old, even after he went to school. His mother became a widow when he was a baby, and she wanted to nurse him as long as she could "to give him all the good possible."

The Papago baby is usually nursed until dentition begins, when the mother gives it in addition portions of almost everything she herself eats. Nursing is often prolonged.

The Mohave told the writer that there are some women among them who even when pregnant nurse their babies.

Among the Yuma, children of 1 year partake invariably of a diet similar to that of the adults, though they are nursed besides.

Among the Opata nursing is generally normal, although it happens, particularly with the more fleshy women, that the secretion of milk is scanty. As among other Indians, the nursing is often prolonged until the child is 2 years of age or even older, but weaning follows at once if the woman finds that she is again pregnant.

As to other Mexican tribes, the conditions of nursing are much like those among the tribes in southwestern United States. Among the Tarahumare nursing begins with the flow of milk. If this is retarded, the mother tries to press out the milk. In the meanwhile the infant is given warm water.

LATER ATTENTION TO THE CHILD; HEAD DEFORMATION

With nearly all the tribes, owing to peculiar beliefs of the people, the infant is kept within doors for a certain period. Among some of the Rio Grande Pueblos and the Papago the time is four, among the Zuñi four to nine, among the Hopi twenty, and among some of the Tarahumare thirty, days.

There is no trace in any of the tribes of circumcision or other mutilation; but there is a phase of the treatment of the infant by the mother in some of the tribes which frequently results in head deformation.

In nearly all the tribes here dealt with the infant spends a large part of its existence from soon after birth to the tenth month or later, until it can sit up, on a cradle board or in a baby carrier or a swing.[a] In cases in which the appliance by reason of its nature or of the method of securing the infant to it permits free movement of the head of the child, as among the Ute, Jicarillas, Pima, Papago, Walapai, Havasupai, and most of the Mexican tribes, the head develops in a normal way. In cases in which, on the other hand, as among the Apache, Navaho, all the Pueblos, Mohave, and Yuma, the infant is so fastened to the board that the motion of its head is limited (though the head itself is in no way fastened) and in which, in addition, it is obliged to lie much of the time on its back, flattening of the back of the head of various kinds and degrees is the result. The compression persists throughout life, seemingly without marked change in form and relative dimensions, and is without appreciable effect on the intellect or longevity of the individual. The cranial modification here considered is certainly in no way or degree hereditary. Figure 1 illustrates a pronounced lateral compression of this nature in the skull of an ancient Pueblo.

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[a] See writer's A Cora Cradle, *American Anthropologist*, n. s., VII, no. 2, Apr.-June, 1905, 361; Notes on the San Carlos Apache, ibid., no. 3, July-Sept., 1905; and Notes on the Pima, ibid., VIII, no. 1, Jan.-Mar., 1906; also his Notes on the Indians of Sonora, Mexico, ibid., VI, no. 1, Jan.-Mar., 1904.

In some tribes head deformation is diminishing in frequency. It has existed in all localities, and still is, on the average, more pronounced and also somewhat more common among males than among females, probably in consequence of the slightly greater weight of the head of the male infant. The writer has amply satisfied himself that this deformation is wholly incidental. The treatment which gives rise to it is not watched or regulated in any way in any of the tribes. The deformation is well known and its cause understood by the Indians, but most of them feel helpless about it. In some localities, however, the flat occiput seems to be viewed with favor. There may be a natural explanation for this; if the occipital compression is pronounced there is developed a high and rather vertical forehead, possibly admired in some tribes, as it is sometimes among whites.

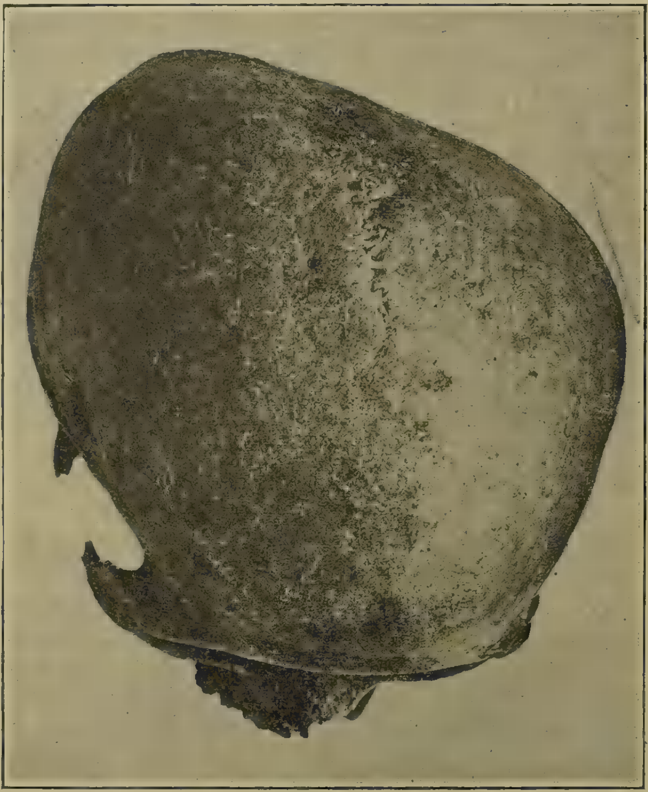

FIG. 1. Ancient Pueblo skull, showing in a high degree effect of lateral occipital compression.

The baby is nursed while laced up, the mother taking the cradle board on her lap. The infant is taken out of the cradle board three to five times each day, first at the beginning of the day, and lastly before the family goes to sleep. At night it is kept in the cradle, mothers believing that their infants remain more quiet in this way and are thus less likely to disturb them. It was observed during the examination of the pulse that as soon as unlaced the infant would generally awake and become restless.

The time gradually to dispense with the cradle begins when the child is sufficiently old to sit. By this time he usually has a second, larger cradle board. The board is wholly discarded when the child walks. In one observed instance a boy, the first child of the family, 13 months old, was still kept part of the time on the cradle board.

The confinement of the child in the cradle board or swing varies with tribes and families. In cases in which the cradle board is used, the child is usually kept strapped in it day and night, being freed for a while only when it is to be cleaned. When the child is old enough to begin to sit, the intervals spent outside the cradle during the day are longer. The time of complete abandonment of the cradle board is regulated in no way, and usually coincides with the period at which the child learns to walk. Where nets and other swings are used, the child has more freedom.

Besides the attentions connected with the cradle board, nursing, and feeding, the growing infant receives but little care. It is washed infrequently, except in some of the more civilized families. On journeys it is carried in its cradle board or in a blanket on the back of the mother. At the proper time the babe is encouraged to sit, and later on to walk. Though not less loved, it is generally played with and especially talked to somewhat less than among the whites. As it grows it is left largely to the attention of the older children.

Tribal details.—Among most of the Apache, Maricopa, Mohave, and Yuma the cradle board consists of a reed frame, to which are fastened numerous flat crosspieces of light wood and a hood. The base is covered with a specially made mat of soft cedar bark, overlaid with cloth, or with several layers of old calico, some cotton wadding, or only a layer of excelsior. Under the head is placed an additional fold of calico or a special pad, and a similar pad may be used under the shoulders to keep the child's body straight. The infant is covered with two or three layers of calico or cotton cloth, and over these are folded the cradle flaps, laced or bound together. The bow is covered on the back with a larger piece of cotton cloth to protect the head of the child from wind and dust; from the fore part of it are suspended rattles or other playthings to amuse the infant, and perhaps an amulet to protect it.

Occipital flattening in various degrees is very common among Apache children, much more so than among the adults. The cause of this is not apparent, though it must result from some change of habits. Possibly in former years the children, brought up in times of unrest, were carried about much more than they are to-day, being thus less likely to acquire the deformation.

The Navaho and Pueblo[a] infants also are carried on cradle boards. The Navaho appliance consists of one or more, frequently two, boards, to the sides of which are attached leather strings, with which the child, wrapped in cloths or a buckskin, is fastened. A layer of cedar bark or of other soft substances and pieces of fabric cover the boards. Under the shoulders of the child is placed by some a soft, oblong cushion or fold "to make the child straight." Under the head is another cushion or fold, most often made of calico, not hard, yet firmer than a feather or a wool pillow. This somewhat rigid surface undoubtedly aids in producing the occipital flattening, which is found frequently, and often in a high degree, in the tribe. The child is strapped on the board tight enough not to be able to turn on its side, with the result that whenever the cradle board is inclined or placed horizontally some part of the occiput of the child is in contact with the head cushion. The infant undoubtedly acquires a habit of lying in a certain position, either straight on the occiput or a little to one side, and a flattening of the part habitually compressed results. Most of the occipital compressions found among the Navaho, as well as elsewhere are more or less unilateral. They are, the writer is satisfied, not the result of any inherent or acquired weakness of the skull. On examination no weakness of the occiput was detected in any case, and there is no rachitis as yet in this or in any other of the southwestern tribes visited.

As elsewhere, the occipital compression is found more frequently, and on the average more pronounced, in the male among the Navaho.

As to any intentional deformation in this tribe, most of the women questioned in this matter did little more in response than laugh. One older woman said that the Navaho "do not like a head that protrudes behind," illustrating the words with her hands.

The occipital compression of the Apache, the Navaho, and the modern Pueblos is identical with that found among other tribes in Arizona, the ancient Pueblos,[b] some of the prehistoric cliff-dwellers, and among the so-called "mound-builders." This characteristic feature occurred among tribes extending in prehistoric times over a very large part of our present Southern states, almost the whole of northern Mexico and other parts of North America, as well as over certain areas in Central and South America.

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[a] At Laguna, San Felipe, and other pueblos the child is laid in its cradle soon after it is washed and is kept there nearly all the time during the first two or three months. After that it is taken out several times each day.

[b] When some of the Laguna and San Felipe Pueblos were questioned as to the cause of the former frequent occurrence among them of occipital compression they replied that long ago they used harder head cushions, not having materials so soft as are available to-day.

The deformation was not observed in any instance to have produced disease of the brain or abnormality of its functions. It is the only form of artificial deformation of the head that exists or ever existed among our southwestern Indians or among the Indians of northern Mexico.

The following table shows the proportion of individuals with various forms and grades of occipital compression found in the different tribes among those who were measured and examined:

Tribe.	Number examined.		Occipital deformation.			
			Males.		Females.	
	Males.	Females.	Number.	Per cent.	Number.	Per cent.
Southern Ute	50	20	1	2.0	....	....
Apache:						
White Mountain	52	30	13	25.0	8	26.0
San Carlos—						
Adults	43	24	8	19.0	4	17.0
Children	191	201	89	47.0	57	28.0
Mescalero	31	....	3	10.0	....	....
Jicarilla	42	....	....	....	....	....
Walapai	35	10	1	3.0	....	....
Havasupai	23	2	1	4.0	....	....
Navaho	50	30	40	80.0	13	43.0
Hopi:						
Adults	123	45	43	35.0	12	27.0
Children	28	....	8	28.0	....	....
Zuñi	60	30	11	18.0	3	10.0
Rio Grande Pueblos	266	30	95	36.0	6	20.0
Papago	50	30	....	....	1	3.0
Pima:						
Adults	53	30	2	4.0	....	....
Children	115	144	11	9.5	5	3.0
Maricopa	40	30	3	7.5	2	7.0
Mohave:						
Adults	85	41	38	45.0	11	27.0
Children	25	25	2	8.0	1	4.0
Yuma:						
Adults	29	5	16	55.0	3	60.0
Children	20	30	3	15.0	2	7.0
Opata	31	22	....	....	....	....
Yaqui	52	34	6	11.5	2	6.0
Mayo	52	30	2	4.0	1	3.0
Tarahumare	23	10	1	4.0	....	....
Tepehuane	40	15	....	....	....	....
Tepecano	27	....	2	7.0	....	....
Huichol	29	19	3	10.0	2	10.5
Cora	53	11	8	15.0	....	....
Nahua	50	....	2	4.0	....	....
Tarasco	50	30	3	6.0	2	7.0
Otomi	62	25	1	2.0	....	....
Mazahua	40	....	4	10.0	....	....
Tlahuiltec	54	31	9	17.0	4	13.0
Total	1,954	984	429	22.0	139	14.[illegible]

The principal physical effects on the skull of this deformation are as follows: The antero-posterior cranial diameter is shortened, the extremes of shortening ranging from a few millimeters to about 3 cm. The breadth and height of the skull are augmented, the former by up to 2 cm., the latter 1½ cm. The size, capacity, weight, and thickness seem to be unaffected, or but slightly altered. The vault, and occasionally also the base, of the skull show more or less asymmetry; in a few instances the compression is wholly unilateral (see fig. 1). The facial bones proper suffer but little, but the orbits are modified in the more pronounced cases of compression.

The exact effects of the deformation on the brain form and gyration to a large extent remain still to be determined. Intracranial casts show mainly a flattening and spreading of the occipital lobes and a compensatory augmentation or prominence of the part posterior to the central fissure. The majority of the fissures must be changed more or less in direction.

Physiological Observations on Children

GENERAL

Thorough anatomical, physiological, sensimetric, and psychological studies of the Indian child are most desirable and promise valuable results, but thus far contributions to these subjects are very limited. They consist, in fact, of no more than small series of physical measurements. The writer made it a point, especially during his last expedition, to inquire into a few particulars of the Indian child's development and functions, with the following results.

Indian children of all ages are, as a rule, well nourished; exceptions are rare, particularly among nursing infants. Up to the time they begin to walk the babies spend much time in sleeping, and, being less subject than white children to minor digestive and other disturbances, they are on the average more quiet and less restless. When they begin running about, they are active at all times of the day. Their first teeth begin to cut mostly during the sixth month, and the process is usually accomplished without noticeable difficulty. The functions of crawling, sitting, and walking manifest themselves nearly as among whites, though individual peculiarities are met with. The Indian child is not backward in talking, although he does not receive quite as much teaching or exercise in this particular as the white child.

Growing Indian children are plump, and many have very pleasant features. When at home or alone they are playful; in general, however, they are somewhat more shy and less demonstrative, exuberant, or moody than white children. There are comparatively little fighting, little feud, and very little care or prolonged unhappiness among them. The school children appear on the average better nourished than those of the whites. According to the general testimony of the teachers, and from personal observation, they are easily managed; but owing to lack of attention at home, they require considerable care in the matter of cleanliness. Like white children, they manifest an organic need of abundant and varied physical exercise, without which their health suffers.

Mentally, as a rule, Indian children appear to possess somewhat less initiative and to be slightly less bright than white children, but there are numerous exceptions. They show much natural patience. They learn well, though more by memory or imitation than by the exercise of reason. Here, however, there are again exceptions, and the fact that the Indian children have to learn in a language different from that in which they are brought up may be largely responsible for their apparent shortcomings. They are apt in learning English, and those who are long in school speak it without unusual accent. Not a few learn more than one language, particularly the languages of other tribes. They generally make rapid progress in drawing, music, history, and geography, and were it not for their peculiar ways of viewing things, acquired from their elders, they would show aptitude for natural science; but they find difficulties with grammar, and especially with higher arithmetic.

The school children, particularly the girls, are by nature fond of dressing nicely. They are not, in general, quite as demonstratively affectionate, emotional, impatient, and sentimental as white children of similar age, and have not yet to the same degree the white child's ambitions, but most if not all of these differences are the result of home training and influence. Really vicious children seem to be unknown among the Indians here dealt with. The chief transgressions are untruths, little thefts, and fighting, while among the children attending school not far from their parents' homes there is some truancy. Among the older pupils—those above 16—transgressions are also comparatively rare, although serious wrongdoing, as insubordination, violence, loss of chastity, and other offenses, now and then occur. "Bad habits" (self-abuse) have not been observed among the Indian school children by any of the teachers or matrons questioned on that point.

The foregoing observations are applicable to the children of all the tribes studied. A few special notes concerning the Apache and the Pima children, particularly those attending school, were made by the writer on his last expedition.

At San Carlos the children generally learn to walk before they can speak more than a few simple words; but thereafter they quickly learn to talk. Children between 1 and 3 years of age are occasionally seen to go about on the ground on their hands and knees. Walking on all fours also occurs.[a] Some children do not either crawl or walk on the hands and feet. A woman told the writer of a little child who walks, although only 1 year old.

Near one of the dwellings of the San Carlos the writer came across a peculiar contrivance put up for teaching a little child to walk. It was a horizontal bar, crudely made, 4 feet long, fastened 20 inches from the ground to three small vertical posts. The whole apparatus bore the long name of *ci-ma-ni-dn-co me-yi-no-di-ta*. The parents thought that their baby, who was about a year and a half old, was backward in learning to walk, so they put up this contrivance, which is said to be used also by others under similar circumstances. The child was seen to grasp one of the vertical posts and lift itself until it got hold of the horizontal bar, when it walked along.

The San Carlos Apache children of from 1 to 4 years of age are usually quite neglected in the matter of cleanliness. Even profuse nasal discharges are often disregarded.[b]

The school children are an active and happy lot. They greatly enjoy and benefit by all sorts of exercise provided for them. There is little trouble in the San Carlos schools on account of quarrels. Occasionally there are dissensions or fights, but there are no brutalities, feuds, long-lasting bad feeling, or jealousies. The elder girls are motherly to the younger, and all are quite unselfish. As a rule the children are not given to lying, though in every class there will be found a few, especially girls, who can not be fully trusted. Some of the school children, particularly girls, will steal little articles when they have an opportunity. The girls seem always prone to take vaseline, which they rub into their scalps, supposing that it makes the hair grow better. Occasionally one will abstract something of value. For this wrongdoing, however, their home training, which is not so good as in other tribes, is responsible.

The children are not inordinate eaters, even when the food supply is unlimited. A few, however, habitually take more than they can consume. Under discipline they are clean. Both girls and boys show aptitude in singing and declamation, and have agreeable, fairly strong voices. The girls are less shy and backward than those in some of the pueblos. The San Carlos children are not much afraid of darkness. One of the school girls ran a distance of several miles at night from the school to her home. Yet they believe in spirits who may visit them at night. They speak very seldom of dreams. Nightmares are infrequent. On different occasions two of the school girls had each a dream of spirits. One dreamed of being carried away by a spirit, and when she told of this on awakening it was observed that all her companions believed the story and went so far as to show to the matron alleged traces of the presence of the spirit, but there was no panic. Among the children from about 12 years of age upward it was noticed that they like to be up late in the evening and to stay in bed late in the morning. None of the healthy children ever sleep during the day.

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[a] In a Yuma hut the writer saw an infant of mixed blood about 2 years old run on all fours; he saw also a similar case of a full-blood child about 18 months old among the Maricopa, and before that of an older full-blood infant among the Huichol in Mexico. In every instance the child moved with the arms straightened and the legs bent forward but slightly at the knees, much after the manner of a quadruped. A more common form is that in which the child moves on its hands and knees. (See C. Lumholtz, Unknown Mexico, II, 90, and following plate; but in that publication the frequency of the phenomenon is possibly overestimated.)

[b] These discharges are removed by the mother or others, among all the Indians, with the thumb and forefinger, in a characteristic manner.

The Pima school children are easily managed, more so than the Apache, and they are not so noisy. They are somewhat given to falsehood, but very seldom steal, and are in general quite timid. The school girls pilfer marrow, fat left in the pans, and vaseline, and at night rub these substances into their hair "to make it grow thick." The children are affectionate, and sensitive to slight, neglect, or reprimand. They do not like to be alone, and the girls are easily frightened. In the memory of the present teachers (a period of about three years) there was one panic in the Sacaton school. It occurred among the girls returning from evening school. Catching sight of a white dog dying, they ran screaming all over the school grounds.

The children of the more primitive tribes (as the Huichol, Cora, Tarahumare), especially those who seldom see strangers, on being approached either scatter instinctively in all directions and hide most effectually behind plants or rocks, or lie in hollows; if caught before they can make their escape, they burst into angry crying and struggling.

The Indian children usually play in groups. There is less laughing and screaming, as well as less crying, among them than among ordinary white children, though they are by no means stolid or voiceless. On occasion they show much agility and endurance.

Among the Indians punishment of children is not totally abstained from, as is usually believed, but it is only manual and light. Scolding a naughty child is common. More severe chastisement of children, even stepchildren, is absolutely unknown, except rarely in case of drunkenness on the part of the parent or guardian, and no child is ever abandoned to become a public charge.

SPECIAL STUDIES ON CHILDREN

Desiring to learn more precisely the conditions of development of Indian children, the writer went from dwelling to dwelling, among the San Carlos Apache and the Pima, two tribes representing, as before mentioned, the most dissimilar physical types, and into the schools, conducting a line of special examinations. At the outset the serious obstacle of a frequent lack of proper age records was met with, particularly with older children, and this necessitated a division of the subjects studied into two series, one in which the age could be and the other in which it could not be accurately ascertained. The series in which the age was known is restricted to 54 Apache and 80 Pima children of both sexes, mostly infants, while the group in which the age was more or less uncertain embraces 392 Apache and 310 Pima, nearly all school children, ranging from the earliest school age to late adolescence. Owing to differences in the stage of development, the points of inquiry differed a little in the two series. In the first series they were height, pulse, respiration, dentition, sitting, standing, walking, speaking, nursing, and food; in the second series, height, weight, principal head and face dimensions, pulse, respiration and temperature, dentition, manual strength, puberty (in girls), and the appearance of beard. The results of the investigations follow.

CHILDREN OF KNOWN AGE

Height.—Owing to the sensibilities of the mothers, it was not convenient to measure the length of any of the infants under 1 year of age, and among the Apache there were difficulties even with the older children at home. The table below gives the data secured, and also similar observations on white children for purposes of comparison (those of Bowditch are on children of American parentage).

Average height, in centimeters.

Boys.						Girls.					
White.		Apache.		Pima.		White.		Apache.		Pima.	
Age.	Height.	Age.	Height.	Age.	Height.	Age.	Height.	Age.	Height.	Age.	Height.
Years.		*y. m. d.*		*y. m. d.*		*Years.*		*y. m. d.*		*y. m. d.*	
[a] 1	69.60	1 0 11	72.0	1 8 0	77.20	1	69.00	....	....	1 0 16	70.60
[b] 1.55	74.18	....	....	....	....	....	....	....	....	1 5 14	77.00
										1 6 0	72.50
										1 10 5	74.80
										1 10 5	75.20
										1 11 0	79.70
[a] 2	79.60	....	....	2 0 0	75.50	2	78.00	2 11 0	91.30	2 3 0	82.50
[b] 2.43	85.30	....	....	2 1 0	87.60	2.45	83.50	....	....	2 5 16	86.80
				2 2 9	86.80	....	....	....	....	2 8 14	87.00
				2 6 20	89.30	....	....	....	....	2 10 0	90.80
				2 8 14	88.70	....	....	....	....	....	....
[a] 3	86.00	....	....	3 0 0	89.07	3	85.00	....	....	3 0 10	89.30
[b] 3.34	91.90	....	....	3 0 1	87.50	3.43	89.97	....	....	3 2 0	92.70
				3 0 3	84.90	....	....	....	....	3 4 0	94.50
				3 0 12	84.10	....	....	....	....	3 10 0	108.00
				3 1 0	96.30	....	....	....	....	....	....

[a] Landois and Stirling, Human Physiology, 4th ed., Philadelphia, 1892, 471.

[b] Daffner, F., Das Wachstum des Menschen, 2d ed., Leipzig, 1902, 323.

Average height, in centimeters—Continued

Boys.						Girls.					
White.		Apache.		Pima.		White.		Apache.		Pima.	
Age.	Height.	Age.	Height.	Age.	Height.	Age.	Height.	Age.	Height.	Age.	Height.
Years.		*y. m. d.*		*y. m. d.*		*Years.*		*y. m. d.*		*y. m. d.*	
[a] 3.34	91.90	....	....	3 5 10	93.40	....	....	....	....	....	....
				3 7 19	99.80	....	....	....	....	....	....
[b] 4	93.20	....	....	4 4 7	103.70	4	91.00	....	....	4 4 0	91.80
[a] 4.43	96.64	....	....	....	....	4.50	96.07	....	....	4 6 0	104.50
				4 4 11	98.40	....	....	....	....	4 9 7	103.50
				4 4 20	103.90	....	....	....	....	4 11 0	103.30
				4 6 0	101.00	....	....	....	....	4 11 20	105.70
[b] 5	99.00	....	....	5 0 11	105.40	5	97.00	....	....	5 3 18	103.60
[a] 5.42	103.20	....	....	....	....	5.40	100.60	....	....	5 10 0	111.30
[c] 5–6	106.00	....	....	....	....	5–6	105.30	....	....	....	....
[b] 6	104.60	6 6 20	105.00	6 4 0	117.70	6	103.20	....	....	6 7 0	113.60
[a] 6.41	105.50	....	....	....	....	6.37	104.92	....	....	....	....
[c] 6–7	112.00	....	....	6 9 20	116.00	6–7	110.90	....	....	....	....
[c] 7–8	117.40	....	....	....	....	7–8	116.70	....	....	7 4 7	117.50
										7 9 15	118.30
[b] 8	117.00	....	....	8 2 0	128.00	8	113.90	....	....	8 0 0	119.30
[c] 8–9	122.30	....	....	....	....	8–9	122.10	....	....	....	....
[c] 10–11	132.60	....	....	....	....	10–11	131.50	....	....	10 6 11	136.20
										10 8 0	136.10
[b] 12	135.90	....	....	....	....	12	132.70	....	....	12 1 8	138.40
[c] 12–13	141.70	....	....	....	....	12–13	145.20	....	....	12 1 8	140.00
										12 9 0	149.60
[b] 13	140.30	....	....	....	....	13	138.60	....	....	13 0 0	151.20
[c] 13–14	147.70	....	....	....	....	13–14	149.20	....	....	....	....
Adults [b]	172.20	....	172.70	....	172.10	....	157.70	....	156.50	....	156.90

[a] Daffner, F., Das Wachstum des Menschen, 2d ed., Leipzig, 1902, 323.

[b] Landois and Stirling, Human Physiology, 4th ed., Philadelphia, 1892, 471.

[c] Bowditch, H. P., The Growth of Children, *Twenty-second Report of the State Board of Health of Massachusetts*, Boston, 1891.

Even though much less complete than desirable, the foregoing table shows plainly the surprising fact that with only a few exceptions the Indian children dealt with of both sexes, and at all ages up to 13—that is, up to or nearly up to puberty—are somewhat taller than the average white children of corresponding sex and age. This fact has further significance: as the stature of the adults of the several groups of whites and Indians included in the table is nearly alike, it necessarily follows that either the growth of the Indian child suffers at some period in or during the whole adolescence a relative retardation, or that the adult height is reached earlier, growth in stature stopping sooner, than among the whites. The matter resolves itself into new problems of much interest, which furnish a strong incentive for further investigation.

Pulse and respiration.—The tests for pulse in infants which could not yet sit freely were made while they were lying down and quiescent, by listening directly to the heart beats; in the older children as a rule the radial pulse was examined, with the subject invariably in a sitting position and quiet. Respiration was counted in the same position and, wherever there seemed to be any danger of developing nervousness, before taking the pulse. In general, every reasonable care was used to obtain data only from children in normal condition, mentally and physically. None of the results of any examination were tabulated or analyzed in the field, to avoid the formation of any preconception; most of the conditions were learned by the writer only while finishing the various tables and comparisons.

As to the quality of pulse, it was found frequently in those under 3 or 4 years of age to be slightly irregular in rhythm; later on such irregularities are rare. In a few instances a slight systolic hushing sound was present, as it is in not a few white children, without apparently any actual valvular defect. No organic lesion of any nature was met with.

Respiration was often found to be irregular, the child holding its breath for a while and then, to compensate, breathing more rapidly than on the average. This holding of the breath, which calls for much patience on the part of the examiner, is subconscious and occurs even in very young infants.

The following table gives the main results as to the frequency of the heart beat and some comparison with that in white children:[a]

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[a] For detail data see Appendix.

Pulse, rate per minute.

Whites.			San Carlos Apache.									
			Male.					Female.				
Age.	Authority.	Average pulse.	Cases.	Average age.	Average pulse.	Minimum.	Maximum.	Cases.	Average age.	Average pulse.	Minimum.	Maximum.
Newborn	Landois and Stirling [a]	130.0–140.0	10	191.6 days	133.2	110	168	8	208 days	136.6	115	160
0 to 1 year	Vierordt [b]	134.0										
1 year	Landois and Stirling [a]	120.0–130.0	3	1.57 years	122.0	108	144	5	1.69 years	122.8	110	144
1 to 2 years	Vierordt [b]	110.6										
2 years	Landois and Stirling [a]	105.0	6	2.51 years	114.7	90	132	4	2.63 years	113.5	100	132
2 to 3 years	Vierordt [b]	108.0										
3 years	Landois and Stirling [a]	100.0	3	3.24 years	104.0	96	120	2	3.52 years	115.5	105	126
3 to 4 years	Vierordt [b]	108.0										
4 years	Landois and Stirling [a]	97.0	.....	.....	.....	.....	.....	1	4.08 years	114.0	.....	.....
4 to 5 years	Vierordt [b]	103.0										
5 years	Landois and Stirling [a]	90.0–94.0	.....	.....	.....	.....	.....	1	5.67 years	108.0	.....	.....
5 to 6 years	Vierordt [b]	98.0										
6 to 7 years	.....do	92.1	1	6.55 years	108.0	.....	.....	.....	.....	.....	.....	.....

[a] Human Physiology, 4th ed., Philadelphia, 1892.

[b] Anatom., Physiolog. und Physic. Daten und Tabellen, Jena, 1888, 1893.

Pulse, rate per minute—Continued

Whites.			Pima.									
			Male.					Female.				
Age.	Authority.	Average pulse.	Cases.	Average age.	Average pulse.	Minimum.	Maximum.	Cases.	Average age.	Average pulse.	Minimum.	Maximum.
Newborn	Landois and Stirling [a]	130.0–140.0	9	171.5 days	138.7	114	150	10	186.2 days	132.8	120	144
0 to 1 year	Vierordt [b]	134.0										
1 year	Landois and Stirling [a]	120.0–130.0	2	1.48 years	114.0	108	120	6	1.61 years	115.2	95	138
1 to 2 years	Vierordt [b]	110.6										
2 years	Landois and Stirling [a]	105.0	6	2.26 years	105.0	90	120	3	2.47 years	94.3	86	102
2 to 3 years	Vierordt [b]	108.0										
3 years	Landois and Stirling [a]	100.0	5	3.11 years	100.8	88	116	2	3.43 years	90.0	84	96
3 to 4 years	Vierordt [b]	108.0										
4 years	Landois and Stirling [a]	97.0	3	4.41 years	94.7	90	98	5	4.69 years	87.2	80	92
4 to 5 years	Vierordt [b]	103.0										
5 years	Landois and Stirling [a]	90.0–94.0	1	5.03 years	98.0			2	5.57 years	87.0	84	90
5 to 6 years	Vierordt [b]	98.0										
6 to 7 years	do	92.1	2	6.57 years	87.0	84	90	1	6.58 years	72.0		
7 to 8 years	do	94.9										
8 to 9 years	do	88.8	1	8.16 years	74.0			1	8 years	80.0		
9 to 10 years	do	91.8										
10 years	Landois and Stirling [a]	90.0										
10 to 11 years	Vierordt [b]	87.9						2	10.59 years	75.0	72	78
11 to 12 years	do	89.7										
12 to 13 years	do	87.9						3	12.32 years	74.7	72	78
13 to 14 years	do	86.8						1	13 years	76.0		

[a] Human Physiology, 4th ed., Philadelphia, 1892.

[b] Anatom., Physiolog. und Physic. Daten und Tabellen, Jena, 1888, 1893.

With newborn San Carlos Apache and Pima, in the waking state, the pulse is somewhat more frequent than in the average newborn white, reaching 160 or more beats per minute; but the heart slows down, especially during the first six months, and the averages for the whole first year show but slight differences from those of whites. The children of the two tribes are, during the first year, in respect to pulse ratio, much alike.

In children above 1 year of age the Apache show, so far as the limited material indicates (up to 6.55 years), more pulse beats per minute than the Pima. The number of observations is small, but the fact is too uniform to be wholly fortuitous. The average frequency of the heart beat of the Apache child during the second and third year of life also exceeds a little that of the white, while among the Pima the frequency of pulse is slightly greater only during the second year, falling below the average in whites after that age, and remaining below it through all years thereafter. As will be seen from the data on the second series of children, the Apache child eventually reaches the same condition. The whole phenomena may be summarized thus: Both Apache and Pima children start in life with a somewhat higher rate of heart beat than that of white children of similar age; this relative frequency appears to last during the first three years among the Apache, but only up to the end of the second year among the Pima; after this period the pulse of the children in both tribes falls and stays permanently below the average in white children.

The sexual differences between the two tribes are slight and somewhat irregular. At the same age the Apache show a somewhat higher pulse rate in the female; among the Pima the reverse seems to be the case in a number of groups, but the average age of the girls in these groups is greater than that of the boys; hence comparison becomes unsatisfactory.

As to respiration in the children of the two tribes, considered separately and compared with whites, the conditions set forth in the next table[a] will be seen to be related to those observed with pulse.

---

[a] See also detail data in the Appendix.

Respiration, rate per minute

Whites.			San Carlos Apache.									
			Males.					Females.				
Age.	Authority.	Respiration.	Number examined.	Average age.	Average respiration.	Minimum.	Maximum.	Number examined.	Average age.	Average respiration.	Minimum.	Maximum.
Newborn	Vierordt	30–44	11	0.49 year	46.8	34	60	9	0.57 year	50.8	36	66
0 to 1 year	Quetelet	44										
1 year	Vierordt	28	3	1.57 years	38.7	30	44	6	1.72 years	30.7	24	36
1 to 2 years												
2 years	....	....	6	2.51 years	35.8	20	52	4	2.63 years	31.2	19	52
2 to 3 years												
3 years	Vierordt	25	3	3.27 years	28.0	24	34	2	3.52 years	21.5	21	22
3 to 4 years												
4 years	....	....	....	....	....	....	....	1	4.08 years	22.0	....	....
4 to 5 years												
5 years	Quetelet	26	....	....	....	....	....	1	5.67 years	22.0	....	....
5 to 6 years												
6 years	....	28–20	1	6.55 years	34.0	....	....	....	....	....	....	....
6 to 7 years												

Whites.			Pima.									
			Males.					Females.				
Age.	Authority.	Respiration.	Number examined.	Average age.	Average respiration.	Minimum.	Maximum.	Number examined.	Average age.	Average respiration.	Minimum.	Maximum.
Newborn	Vierordt	30–44	9	0.47 year	40.4	30	52	10	0.51 year	44.4	32	58
0 to 1 year	Quetelet	44										
1 year	Vierordt	28	2	1.48 years	38.0	36	40	7	1.63 years	34.3	27	43
1 to 2 years												
2 years	....	....	6	2.26 years	28.0	23	34	3	2.47 years	28.7	26	32
2 to 3 years												
3 years	Vierordt	25	5	3.11 years	27.0	23	32	2	3.43 years	24.5	21	28
3 to 4 years												
4 years	....	....	3	4.41 years	23.7	22	25	5	4.69 years	25.2	23	28
4 to 5 years												
5 years	Quetelet	26	1	5.03 years	26.0	....	....	1	5.83 years	24.0	....	....
5 to 6 years												
6 years	....	28–20	2	6.57 years	21.0	20	22	1	6.58 years	22.0	....	....
6 to 7 years												
7 years	....	28–20	....	....	....	....	....	2	7.57 years	23.5	22	25
7 to 8 years												
8 years	....	28–20	1	8.16 years	20.0	....	....	1	8 years	23.0	....	....
8 to 9 years												
9 years	....	28–20	....	....	....	....	....	....	....	....	....	....
9 to 10 years												
10 years	....	28–20	....	....	....	....	....	2	10.59 years	22.5	20	25
10 to 11 years												
11 years	....	28–20	....	....	....	....	....	....	....	....	....	....
11 to 12 years												
12 years	....	28–20	....	....	....	....	....	3	12.32 years	21.7	20	23
12 to 13 years												
13 years	....	28–20	....	....	....	....	....	1	13 years	17.0	....	....

During the first year the respiration of the Apache children is somewhat more frequent than that of the Pima, and in the infants of both tribes it is more rapid in the females than in the males; during the second year the frequency is nearly the same in the two tribes, and in both it is greater in the male, but the average age of the females in this group is higher; during the third year the frequency of respiration is again greater in the Apache and is also somewhat greater in the Apache males than in the females; during the fourth year the rate of respiration in the two tribes is about equal and in both greater in the males, but once more the average age of the female subjects is somewhat greater, so that the figures are not directly comparable. Comparison with whites is difficult on account of a lack of good data obtained under similar regulations. If the old Quetelet figures and some of those collected by Vierordt be taken as representative, then respiration is more frequent than in the whites until at least the end of the fourth year among the Apache males and the end of the third year among the Apache females, and during at least the second year among both sexes of the Pima. After the fourth year the rate diminishes, probably falling in both tribes and in both sexes (see data of the second series of children) slightly below the average in whites, and thereafter remains for a long period nearly stationary. The relatively higher rate during the earlier infancy of the Indian children corresponds to some extent with their more frequent pulse rate at that period. It is to be regretted that the groups are not larger and the results of the investigations more conclusive.

The ratio of pulse to respiration was found to vary within comparatively wide limits among the smaller infants, even though there was no excitation or sickness. There was no chance to study properly the variation in single individuals. The following figures show the ratio at different ages of the Indian infants. Precise and ample data for white children for comparison are wanting, but from the observations made it appears that a large majority of cases among the whites are within the range of 2.5 to 4.5 pulse beats to 1 respiration.

Pulse-respiration ratio, according to age

APACHE

Age.	Male.				Female.			
	Subjects.	Average.	Minimum.	Maximum.	Subjects.	Average.	Minimum.	Maximum.
0 to 1 year	9	2.89	2.00	4.94	9	2.85	2.18	4.44
1 to 2 years	3	3.21	2.59	3.60	5	4.09	3.05	5.00
2 to 3 years	6	3.42	2.31	4.90	4	4.03	2.54	4.80
3 to 4 years	3	3.84	2.82	5.00	2	5.37	5.00	5.73
4 to 5 years	....	....	....	....	1	5.18	....	....
5 to 6 years	....	....	....	....	1	4.91	....	....
6 to 7 years	1	3.18	....	....	....	....	....	....

Pulse-respiration ratio, according to age—Continued

PIMA

Age.	Male.				Female.			
	Subjects.	Average.	Minimum.	Maximum.	Subjects.	Average.	Minimum.	Maximum.
0 to 1 year	9	3.47	2.77	4.20	10	2.97	2.24	4.12
1 to 2 years	2	3.02	2.70	3.33	6	3.37	2.79	4.00
2 to 3 years	6	3.82	3.00	4.95	3	3.30	3.07	3.65
3 to 4 years	5	3.51	2.91	4.00	2	3.72	3.43	4.00
4 to 5 years	3	4.00	3.84	4.09	5	3.48	2.86	3.75
5 to 6 years	1	3.77	...	...	1	3.50	...	...
6 to 7 years	2	4.16	3.82	4.50	1	3.27	...	...
7 to 8 years	...	...	...	...	2	3.67	3.60	3.73
8 to 9 years	1	3.70	...	...	1	3.48	...	...
9 to 10 years	...	...	...	...	...	...	...	...
10 to 11 years	...	...	...	...	2	3.39	2.88	3.90
11 to 12 years	...	...	...	...	...	...	...	...
12 to 13 years	...	...	...	...	3	3.44	3.13	3.70

The data show that up to the end of the fourth or fifth year the ratio of pulse to respiration increases somewhat in all the groups with age; this means that respiration suffers a relatively greater retardation during this period than the heart beats. Among both the Apache and the Pima the number of pulse beats to each respiration during the first year is higher in the male children. After that age the conditions, with some exceptions, remain the same among the Pima, but are reversed among the Apache, the number of pulse beats to every respiration being greater in the girls than in the boys; the number of cases, however, is not sufficient to justify definite conclusions.[a]

Teeth.—Among the San Carlos Apache the youngest child with one or more teeth was a girl in whom both lower middle incisors appeared at 2½ months, and among the Pima a girl who had both lower median incisors fairly developed at 4 months and 13 days. Among the Apache the oldest infant without teeth was a girl of 7 months, and among the Pima a boy of 7 months and 20 days. In general, the appearance of the first lower middle incisors takes place at about the same age as in whites (5¾ to 6¼ months, D.).[b]

The upper median incisors follow the lower and appear in whites at from 7 to 7½ months (D.); among the Apache the youngest child in which both these teeth were erupted was 7 months and 20 days, among the Pima 7 months and 17 days, but in both children the teeth had been out for some days. Delayed eruption of these teeth is rare among the Apache, but seems to be frequent among the Pima; the oldest subjects in whom the eruption of the upper median incisors had not taken place were a 12½ months Apache girl and a Pima girl of the same age.

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[a] Compare table Pulse-respiration ratios, in relation to stature, p. 105.

[b] Daffner, F., Das Wachstum des Menschen, 2d ed., Leipzig, 1902, 175–176. D. = Daffner. Compare also with Welcker, *Arch. f. Anthropol.*, I, 114.

Among the whites the teeth that appear next are the upper lateral incisors, the eruption of which takes place during the ninth month. These teeth had just broken through in an Apache girl of 7 months and 20 days and in a Pima boy of 7 months and 17 days, while the oldest children in whom both were still lacking were an Apache girl of 14 months and a Pima girl 1 year and 16 days old. The average date of eruption is probably very close to that in whites. Again retardation was more frequent in the Pima.

The lower lateral incisors, which in white children erupt on the average during the latter part of the tenth month (D.), were seen earliest in an Apache girl of 8½ months and in a Pima girl of 9 months. The oldest Apache child in whom both were lacking was 12½ months; the oldest Pima child 18 months and 2 days old. In three instances one or both of these teeth were out before the upper lateral incisors.

Among whites the teeth which appear in most instances next after the incisors are the upper and then the lower anterior premolars, and the average time of their eruption is the thirteenth month. The canines follow, appearing on the average from the middle to the end of the fifteenth month (D.). Among the Apache children in two cases all the anterior premolars were out before the appearance of any of the canines, and there are indications of similar precedence among the Pima, the order of eruption thus agreeing with that in whites. As to the time of appearance, in the Apache the anterior premolars were not present in any child up to 14 months, but were found in all of 16¾ months and older, while in the Pima the teeth were not erupted in any subject up to 15½ months, and were present in all but one (where the lower were still within the gums) of the children of 17½ months and older. The eruption of these teeth appears to take place somewhat later in the Indian than in the white child. The canines were seen first in an Apache girl of 19 months 10 days, all being present in every older child, and in a Pima girl of 17½ months, being present in all but two older subjects (of 18 months and 18 months and 2 days respectively). Here again a comparison with white children indicates some retardation in the Indian. Unfortunately the number of Indian children studied is very limited and the point can not be considered as decided.

The posterior premolars, which appear in whites between the twentieth and the thirty-third month (D.), were all present in an Apache child of 19 months 10 days, and in another of 20 months; these had not all erupted in three Indian children of from 22 to 23 months of age and were wholly lacking in one of 25 months, but were all present in every case from 26 months upward. Among the Pima none of these teeth were found in children of 2 years or younger; the two lower were present in a boy of 25 months, and were just appearing in another of 26 months and 9 days, but were all present in every subject above this age. While the average age among whites at which the eruption of the first teeth is completed is about 2¾ years (D.), it appears that in the Indian child this occurs earlier.

The whole subject of the first dentition may be briefly summarized thus:

All the teeth of the first dentition appear in the same order in the Indian child as in the white.

All the incisors erupt on the average at about the same age in the two races.

The appearance of the first premolars and the canines seems to be somewhat belated in the Indian.

The eruption of the posterior premolars and the completion of the first dentition are accomplished earlier in the Indian than in the Caucasian.

Between the end of the first dentition and the appearance of the permanent teeth there is in Indians as well as in whites a considerable interval, after which appears the first molar. The eruption of the molars takes place during the latter part of the fifth year (D.). An Apache girl of 5 years and 8 months had all four of these molars, and the same is true of the next and last Apache child of known age, namely, 6 years 6 months and 20 days. In the Pima the youngest child with all four first permanent molars erupted was a girl of 4 years and 11 months; all four of the teeth were present in every child of 6 years and 4 months.

The permanent median incisors appear in whites at from 6¾ to 7¼ years, the lateral ones at from 7¾ to 8½ years (D.). A Pima boy of 6 years 9 months and 20 days had both lower median incisors; one of 7 years 4 months and 7 days had the left upper lateral tooth, but none of the other three, and all the children from 8 years onward had, with one exception, the whole set of permanent incisors. It is plain that so far as the eruption of these eight teeth is concerned there is little if any difference between whites and Indians.

The permanent canines appear in whites during the twelfth year (D.). Both of these teeth in the lower jaw were present in a Pima girl of 10 years 6 months and 11 days, and all four were erupted in another Pima girl of 10 years and 8 months; they were just appearing in a girl of the same tribe of 12 years and 1 month while none were out in the case of her sister, but these two children were twins and not robust.

The permanent bicuspids appear in whites, the anterior during the eleventh and the posterior during the twelfth year (D.). The anterior ones were all found in a Pima girl of 10 years 6 months and 11 days and in another of 10 years and 8 months, and each of these children had also (in one just appeared) the left upper posterior bicuspids. In the twins before mentioned (of 12 years 1 month and

8 days) there were as yet no permanent bicuspids; while all eight were present in the two Pima girls of 12 years and 9 months and 13 years of age.

Of the second permanent molars, which appear in whites during the fourteenth year (D.), both lower and left upper were already present in a Pima girl of 10 years and 8 months, the left lower (just broken through) in one of the twin girls (of 12 years 1 month and 8 days) and the lower right in the other, while all four were out in the girl of 12 years 9 months and 13 days.

The following is a brief résumé of second dentition:

The incisors appear in the Pima at about the same age as in whites, and the same statement is probably true with regard to the permanent first molars and both bicuspids.

The canines seem to appear somewhat earlier in the Indians than in the whites, but there were not enough cases in the series to decide this point.

The second molars apparently erupt earlier in the Pima than in white children.

The shedding of the teeth is dealt with in the detail tables in the Appendix.

The subject of dentition will be considered again in connection with the second series of cases, in which the children whose exact age could not be ascertained are arranged according to stature.

Locomotion and speech.—Sitting: This particular investigation relates to the period at which the Indian child is able to sit without support. From the data gathered it appears that this period is the latter part of the eighth month among the Pima and during the ninth month among the San Carlos Apache. The difference between the tribes is undoubtedly due to the greater bodily freedom enjoyed by the Pima child, which is not confined to a cradle board like that in use among the Apache.

Crawling: This follows soon after the child is able to sit alone, or from about the ninth month.

Standing: The ability of the infant to stand while holding to some support manifests itself very nearly at the same time as the ability to sit without assistance and to crawl. The ability to stand freely was recorded in all the Apache children of 14 months or older and in all Pima of 15½ months (no subjects between 12½ and 15½ months were examined).

Walking: In both tribes the acquirement of the power to walk is nearly contemporaneous with the ability to stand freely, soon after the child is 1 year old. It appears that all the healthy Apache as well as the Pima children of 15 or 16 months can walk alone at least a few steps and that all run about quite freely before the age of 2 years.

The functions just mentioned show practically no differences in the two tribes selected, and are very nearly alike in the time, order, and methods of their manifestation as in the case of normal and healthy white infants. Retardations, however, which are quite frequent among white children taken at large, are apparently very rare among the Indians.

Talking: The youngest Apache child seen who could say one or two simple words ("mama," "papa") was nearly 10½ months old; in infants older than 1 year the ability to say a few simple words is general. At about 2 years of age, sometimes earlier, the child begins to employ a few simple combinations of words and gradually improves until the fourth year, when it talks quite well. Among the Pima the youngest child seen able to say a few words was a girl of 17½ months. Twin sisters of 22 months and 5 days could each say "papa" and "mama" only, but a girl of 23 months not only knew more words but already employed very simple combinations (as "mama, bread;" "papa, water"). After they are 2 years old the Pima children in general, like the Apache, use the words they know with a slight idea of connection, and thereafter improve, until toward the end of the fourth year they speak quite properly.

As compared with whites, it seems that in the beginning of the function of speech and in the ability to learn the Indian child is in no way backward. It is quite certain, however, that the average white child gets more exercise in talking and that after the second year it knows a greater number and variety of words.

Defects of speech, as stammering or stuttering, have never been met with by the writer in any of the tribes visited.

Children Whose Age Could not be Ascertained

The number of subjects in this series exceeds considerably that in the previous category; the approximate ages embraced are from about the fourth year to advanced adolescence.

In the absence of age records it is necessary to choose another basis of comparison, and the most suitable one for the present purpose is stature. The correlation of stature and age in both sexes among the whites being well known, it is possible to assign to each division of the Indian children also an approximate age.

The investigation of this series of children was extended somewhat so as to include determinations of temperature and muscular force, some observations as to puberty, and especially a number of measurements of the body besides stature, which may be expected to throw light on several important lines of development. All these data, and those on pulse and respiration, are supplemented by other data on the adults of the same people, secured by the writer.

Approximation of age.—For the sake of brevity and facility of reference, classification by stature and the probable corresponding ages of the Indian children are given in the following table, in precedence of other data. The estimates are based on the records obtained of children of the same tribes of known age, and on Bowditch's and Quetelet's measurements of whites; it may be added they are doubtless imperfect.

Approximations of age to stature among Apache and Pima children

Height.	Males.	Females.	Height.	Males.	Females.
	Years.	*Years.*		*Years.*	*Years.*
70 to 79.9 cm	1 – 1¾	1 – 1¾	130 to 139.9 cm	10 –12	10 –12¼
80 to 89.9 cm	1¾– 2⅔	1¾– 3	140 to 149.9 cm	12 –14	12¼–14
90 to 99.9 cm	2⅔– 4½	3 – 4½	150 to 159.9 cm	14 –15⅓	14–adult.
100 to 109.9 cm	4½– 6⅕	4½– 6¼	160 to 169.9 cm	15⅓–18	
110 to 119.9 cm	6⅕– 8	6¼– 8⅓	170 to 175 cm	18–adult.	
120 to 129 9 cm	8 –10	8⅓–10			

Pulse, respiration, and temperature.—Pulse in relation to stature: The next table gives the average pulse rates by stature as collected by Volkmann for whites, and the average, the slowest, and the most rapid pulse in corresponding groups of the Indians;[a] and plate XIII shows in a graphic manner the changes in pulse rate with age among the Indians.

Pulse rate in relation to stature

Whites.[b]		San Carlos Apache.							
			Males.				Females.		
Stature.	Males.	Subjects.	Average pulse.	Minimum.	Maximum.	Subjects.	Average pulse.	Minimum.	Maximum.
70 to 79.9 cm	116.5	1	110	....	....	....	....	....	....
80 to 89.9 cm	110.9	....	....	....	....	....	....	....	....
90 to 99.9 cm	106.6	2	88	84	92	....	....	....	....
100 to 109.9 cm	101.5	4	88.5	78	104	2	86.5	79	94
110 to 119.9 cm	93.6	5	81.2	66	92	11	86.2	76	93
120 to 129.9 cm	92.2	18	73	64	84	21	79.5	66	90
130 to 139.9 cm	87.7	30	72.6	58	84	22	76.3	62	90
140 to 149.9 cm	85.1	32	68.6	49	84	42	76.2	60	84
150 to 159.9 cm	77.8	23	69.1	54	78	48	71.9	58	84
160 to 169.9 cm	73.2	34	66.2	57	78	13	73.3	56	84
170 to 179.9 cm	71.9	11	65	58	74	....	....	....	....

---

[a] The examinations of all the children were conducted in an inside porch or room of the schools, during January to March, the weather being rather rainy and the outside day temperature ranging from about 45° to 80° F., the average being slightly less in the region occupied by the Apache than it is in the Pima country.

[b] Volkmann, A. W., Die Haemodynamik nach Versuchen, 1850, 431; also in Vierordt's Anatom., etc., Daten und Tabellen, 2d ed., Jena, 1893, 153; the groups in the original are 70–80, 80–90, etc., hence very nearly identical with the above.

Pulse rate in relation to stature—Continued

Whites.		Pima.							
Stature.	Males.	Sub-jects.	Males.			Sub-jects.	Females.		
			Average pulse.	Mini-mum.	Maxi-mum.		Average pulse.	Mini-mum.	Maxi-mum.
70 to 79.9 cm	116.5	......	....	....	....	......	....	....	....
80 to 89.9 cm	110.9	2	111	108	114	1	105	....	....
90 to 99.9 cm	106.6	1	79	....	....	6	98.3	86	108
100 to 109.9 cm	101.5	6	81.5	72	96	3	96	96	96
110 to 119.9 cm	93.6	8	81.5	72	90	7	85.1	78	102
120 to 129.9 cm	92.2	13	77.1	68	90	18	77.8	70	86
130 to 139.9 cm	87.7	22	72.5	60	85	28	75.2	66	84
140 to 149.9 cm	85.1	25	69.6	60	78	32	72.3	60	84
150 to 159.9 cm	77.8	13	64.9	54	72	36	72.4	58	84
160 to 169.9 cm	73.2	24	66.8	55	78	5	66.0	60	72
170 to 179.9 cm	71.9	......	....	....	....	......	....	....	....

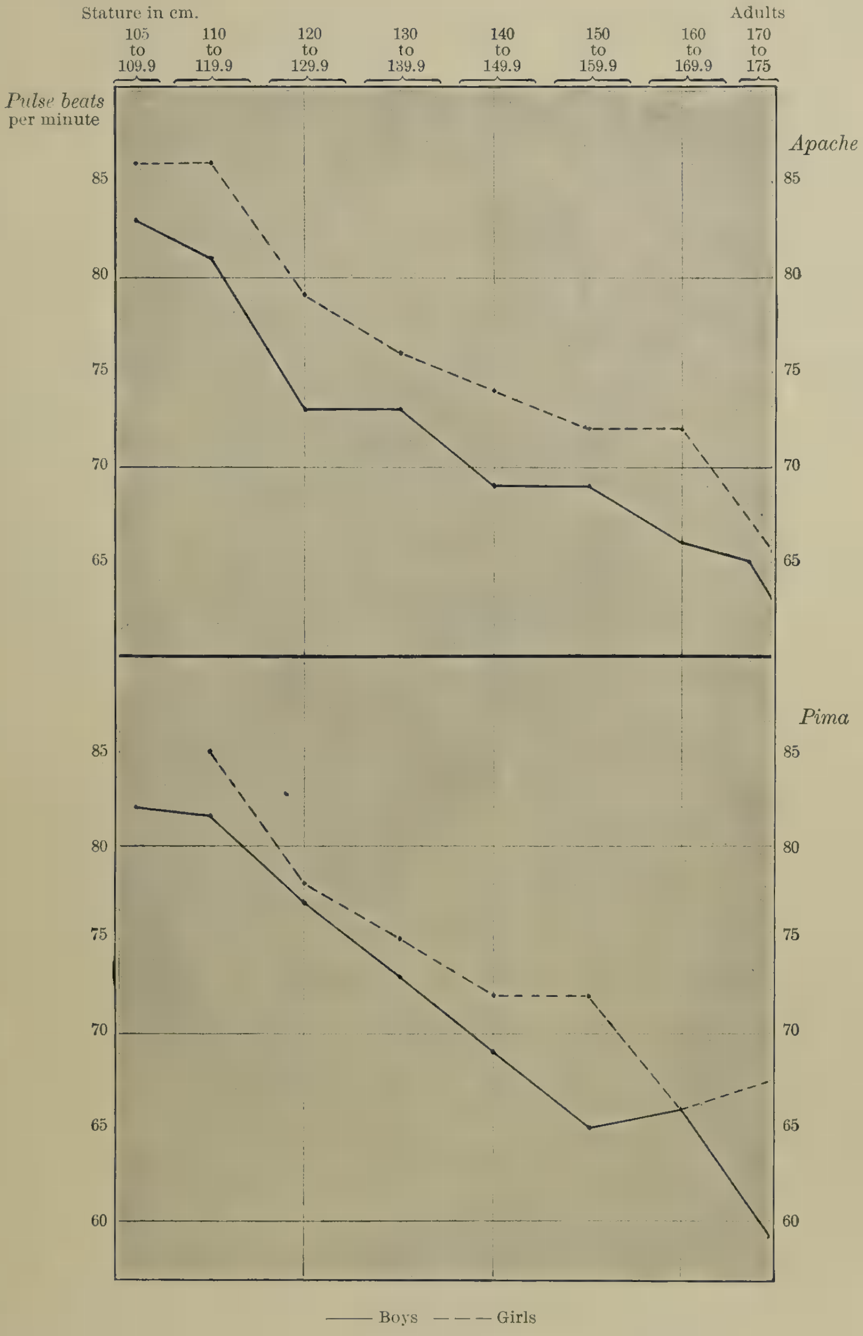
The figures show that the average pulse in all the groups and in both sexes of Indian children above 90 cm. in height (or about 3 years of age) is slower than in whites. There are, of course, a few exceptions in individuals. In many of the subdivisions, however, particularly in the males, even the maximum in the Indians is less than the average in the male whites.

The differences are not the same during the entire period of growth. It was shown in the first series (Children of known age) that the Indian child begins life with a pulse rate higher than among whites. Then follows, during the first six months, a rapid decrease in the pulse rate, followed by a more moderate diminution (although exceeding the rate of retardation in whites) until at least the third year. After this, as may be seen to better advantage in the figures given below, the rate of retardation in the Indian child diminishes until about the eighth year; from 8 to about 13 there is again a more marked decrease of the pulse rate in the Indian; while after 13 the diminution in the rate progresses decidedly more in the whites until nearly adult life. When ultimately a relative stability is attained the differences in pulse rate between the two races are reduced to a considerable extent.[a]

Differences in pulse rate between Indian children and white children of same heights

Stature.	San Carlos Apache.		Pima.		Stature.	San Carlos Apache.		Pima.	
	Male.	Fe-male.	Male.	Fe-male.		Male.	Fe-male.	Male.	Fe-male.
100 to 109.9 cm	−13.0	−15.0	−20.0	− 5.5	140 to 149.9 cm	−16.5	− 8.9	−15.5	−12.8
110 to 119.9 cm	−12.4	− 7.4	−12.1	− 8.5	150 to 159.9 cm	− 8.7	− 5.9	−12.9	− 5.4
120 to 129.9 cm	−19.2	−12.7	−15.1	−14.4	160 to 169.9 cm	− 7.0	+ .1	− 6.4	− 7.2
130 to 139.9 cm	−15.1	−11.4	−15.2	−12.5	170 to 175.0 cm	− 6.9	......	......	......

[a] See Pulse in adults.



PULSE-RATE IN RELATION TO STATURE IN THE INDIAN CHILD

The differences in the pulse rate as compared with the whites are seen to be pronounced and quite similar in the two tribes. In the males the scale of differences is practically the same; in the Apache females the differences in most of the groups are found to be slightly less, this condition being due to the presence of a somewhat larger proportion of cases with relatively rapid pulses, among the children of this tribe.

The differences in pulse rate between the Apache and the Pima are quite insignificant. In the males of the two tribes the rate is nearly the same; in the females the Apache show in most of the groups a slightly higher rate than the Pima. The reason for this was not detected.

The differences between the sexes in pulse rate are pronounced and persistent in both tribes. Taking only the larger groups into consideration, these differences may be expressed in figures as follows:

Excess of average pulse rate in females over that in males

Stature.	San Carlos Apache.	Pima.	Stature.	San Carlos Apache.	Pima.
110 to 119.9 cm	+5.0	+3.6	150 to 159.9 cm	+2.8	+7.5
120 to 129.9 cm	+6.5	+ .7	160 to 169.9 cm	+7.1	
130 to 139.9 cm	+3.7	+2.7	Approximate average excess	[a] 5.0	[a] 3.5
140 to 149.9 cm	+7.6	+2.7			

[a] Beats.

The condition of a relatively high pulse in most of the groups of the Apache female children is here met with again. The cause is unknown to the writer, for equal care was taken in the case of both tribes as to the exclusion of records of children not in full health, and there were no differences of moment in the circumstances of the examinations. In the adult women of the tribes the pulse rate is about equal.

Respiration in relation to stature: No records on respiration in whites have been found that correspond directly to the classification by stature of the Indian children. From data obtained indirectly, as given in the table below, it appears that between the ages of about 3 and 5 years there is little if any difference in the rate of respiration of children of the two races. From about 6½ to 20 years of age the conditions differ with respect to the two tribes represented; in the Pima children of all groups and of both sexes the average rate of respiration is about the same as among whites, but in the Apache it is slightly lower in all groups and in both sexes. (See pl. XIV.) The adult rate in whites is nearly equal to that among the Indians of the two tribes here dealt with.

Rate of respiration in relation to stature

SAN CARLOS APACHE

Stature.	Male.				Female.			
	Subjects.	Average rate per minute.	Minimum.	Maximum.	Subjects.	Average rate per minute.	Minimum.	Maximum.
70 to 79.9 cm	1	42.0						
80 to 89.9 cm								
90 to 99.9 cm	2	25.0	22	28				
100 to 109.9 cm	4	22.7	20	27	2	22.0	20	24
110 to 119.9 cm	6	20.8	18	24	12	21.1	18	24
120 to 129.9 cm	20	19.9	16	24	22	20.9	17	26
130 to 139.9 cm	32	18.7	16	24	28	20.0	16	24
140 to 149.9 cm	32	18.2	15	23	41	19.1	14	25
150 to 159.9 cm	26	18.7	14	24	51	18.7	16	24
160 to 169.9 cm	33	17.6	14	24	13	17.8	14	22
170 to 179.9 cm	11	17.5	14	20				

PIMA

Stature.	Male.				Female.			
	Subjects.	Average rate per minute.	Minimum.	Maximum.	Subjects.	Average rate per minute.	Minimum.	Maximum.
80 to 89.9 cm	2	28.0	28	28	1	25.0		
90 to 99.9 cm	1	30.0			6	29.2	26	32
100 to 109.9 cm	6	25.8	22	29	4	24.3	21	28
110 to 119.9 cm	9	25.0	21	28	8	26.4	21	32
120 to 129.9 cm	14	22.4	18	30	19	22.1	18	27
130 to 139.9 cm	26	21.2	15	26	32	21.2	16	30
140 to 149.9 cm	26	19.8	16	24	35	20.8	16	28
150 to 159.9 cm	16	20.8	18	25	39	19.7	14	24
160 to 169.9 cm	24	19.0	15	24	5	19.6	17	22
170 to 179.9 cm	2	18.5	18	19				

Approximation in whites (after Quetelet, Vierordt, and others)

Stature, 90 to 99.9 cm., corresponding to ages 3½ to 5 years, respectively	27 to 25 per minute
Stature, 110 to 150 cm., corresponding to ages 6½ to 14 years, respectively	25 to 20 per minute
Stature, 150 to 170 cm., corresponding to ages 15 to 20 years, respectively	22 to 18 per minute
Adults, respectively	16 to 19 per minute

The intertribal difference in the frequency of respiration is as follows:

Excess in average rate of respiration in Pima over Apache, by main stature groups

Stature.	Pima male.	Pima female.	Stature.	Pima male.	Pima female.
110 to 119.9 cm	+4.2	+5.3	140 to 149.9 cm	+1.6	+1.7
120 to 129.9 cm	+2.5	+1.2	150 to 159.9 cm	+2.1	+1.0
130 to 139.9 cm	+2.5	+1.2	160 to 169.9 cm	+1.4	

These differences seem to diminish somewhat with age, but as will be seen from other data, a trace of them persists to adult life. They are too regular to be attributed to the operation of chance, and, in the absence of apparent cause, they must be regarded as a natural condition.

Sex differences in the rate of respiration exist in both tribes. They are not great, ranging only up to 1.3 respiration per minute among the Apache and 1.4 per minute among the Pima, in favor of the females, but they are seen to exist among a large majority of the groups.

Pulse-respiration ratio, by stature: The average relations of the pulse and the respiratory rates, as may be seen from the following table, do not change materially in the Indian child with increase in stature after the age of 5 or 6 years; and throughout life they are probably below the averages which commonly prevail among the whites, in whom the ratio is usually from 4 to 4½ pulse beats to each respiration.

Pulse-respiration ratios, in relation to stature

SAN CARLOS APACHE

Stature.	Male.				Female.			
	Subjects.	Average ratio.	Minimum.	Maximum.	Subjects.	Average ratio.	Minimum.	Maximum.
70 to 79.9 cm	1	2.62						
80 to 89.9 cm								
90 to 99.9 cm	2	3.52	3.28	3.82				
100 to 109.9 cm	4	3.89	3.54	4.27	2	3.93	3.91	3.95
110 to 119.9 cm	5	3.90	2.75	5.11	11	4.10	3.17	4.83
120 to 129.9 cm	18	3.65	3.00	4.50	21	3.82	2.92	4.72
130 to 139.9 cm	29	3.90	2.92	5.12	22	3.84	3.00	4.94
140 to 149.9 cm	31	3.77	2.23	4.87	41	3.99	2.72	5.00
150 to 159.9 cm	23	3.69	3.00	5.14	48	3.83	2.91	4.94
160 to 169.9 cm	33	3.76	2.62	5.57	13	4.11	2.82	5.12
170 to 179.9 cm	11	3.70	3.20	4.50				

PIMA

Stature.	Male.				Female.			
	Subjects.	Average ratio.	Minimum.	Maximum.	Subjects.	Average ratio.	Minimum.	Maximum.
80 to 89.9 cm	2	3.97	3.86	4.07				
90 to 99.9 cm	1	2.63			5	3.32	2.69	3.78
100 to 109.9 cm	6	3.15	2.77	3.69	3	3.79	3.43	4.00
110 to 119.9 cm	8	3.31	2.77	4.19	7	3.29	2.69	3.82
120 to 129.9 cm	13	3.48	2.80	4.44	18	3.50	3.13	4.00
130 to 139.9 cm	22	3.44	2.77	5.19	28	3.49	2.20	5.00
140 to 149.9 cm	24	3.49	2.78	4.87	31	3.50	2.50	4.50
150 to 159.9 cm	13	3.11	2.70	3.94	36	3.67	2.42	6.00
160 to 169.9 cm	24	3.52	2.50	4.40	5	3.37	3.00	3.68
170 to 179.9 cm								

The relations differ by tribe and by sex principally in conformity with the differences in the rate of respiration. The number of heart beats to every respiration is perceptibly higher among the Apache of both sexes (though slightly more among the males), and in all the stature groups, than among the Pima. Considering sex alone, the ratio is somewhat higher among the Apache, and very slightly higher among the Pima in the female than in the male. These conditions are more clearly shown in the abstract that follows:

Pulse-respiration ratios in relation to stature, by tribes and sex

Stature.	Excess in number of pulse beats to each respiration in Apache over Pima.		Excess in number of pulse beats to each respiration in females over males.	
	Male.	Female.	Apache.	Pima.
110 to 119.9 cm	+0.59	+0.81	+0.20	−0.02
120 to 129.9 cm	+ .17	+ .32	+ .17	+ .02
130 to 139.9 cm	+ .46	+ .35	− .06	+ .05
140 to 149.9 cm	+ .28	+ .49	+ .22	+ .01
150 to 159.9 cm	+ .58	+ .16	+ .14	+ .56
160 to 169.9 cm	+ .24	....	+ .35	....
Average, approximately	+ .40	+ .35	+ .15	+ .10

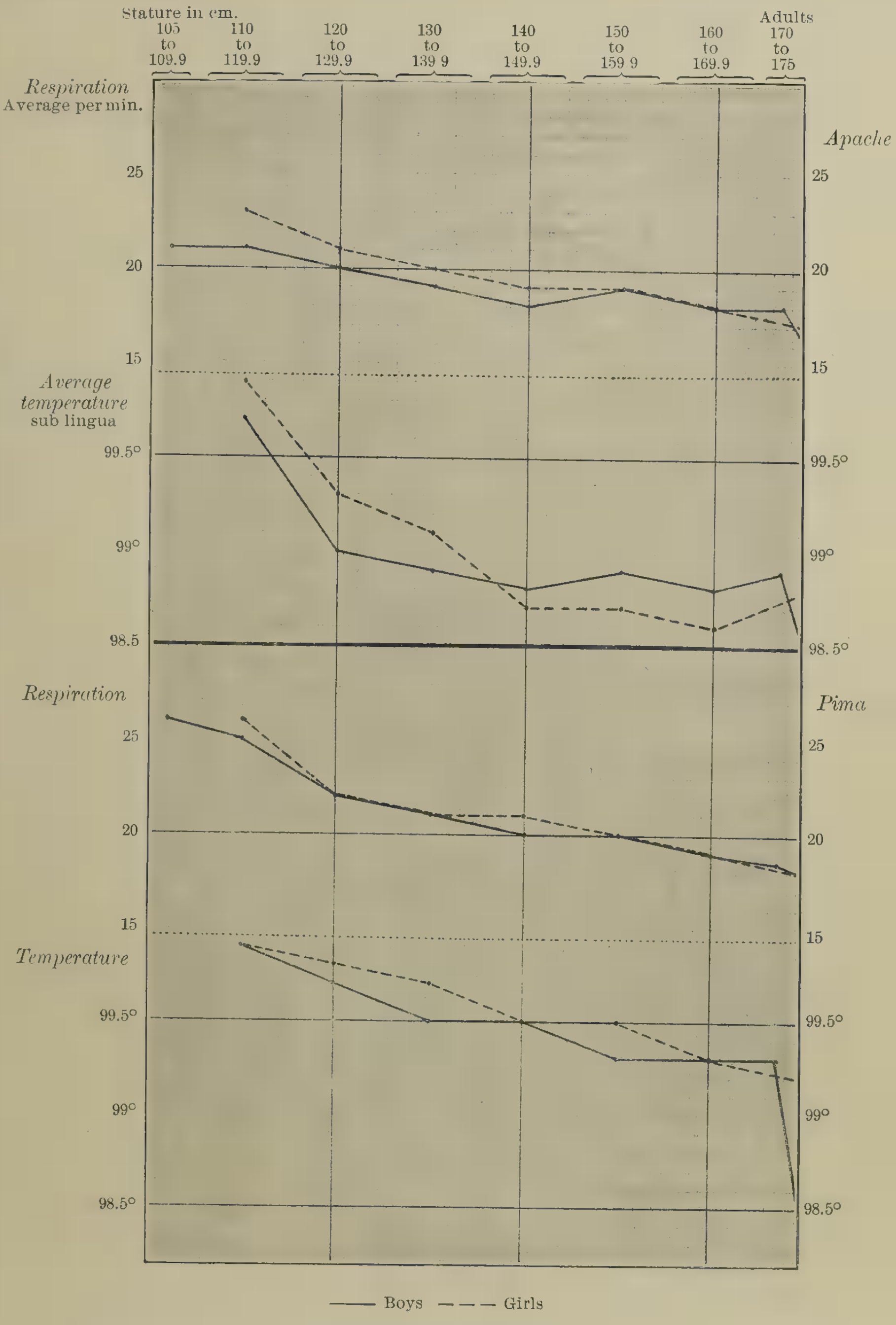
It should be borne in mind that the foregoing intertribal differences in the pulse-respiration ratio are due not to differences in the pulse rate, which are small, but to the relatively slower respiration in the Apache. It is difficult to fathom the cause of this characteristic without much further study. The condition of life of the two series of subjects on whom tests were made, particularly the school children, differed but little.

Temperature in relation to stature: The tests for temperature were made with good clinical thermometers and invariably under the tongue. To insure greater accuracy two thermometers were used simultaneously in most of the cases, one under the right and the other under the left side of the tongue. The instruments were left in the child's closed mouth for at least six minutes. Nothing was done on the part of the children to disturb these tests. The following table and curves (pl. XIV) show the results:

Temperature in relation to stature

SAN CARLOS APACHE

Stature.	Male.				Female.			
	Subjects.	Average temperature.	Minimum.	Maximum.	Subjects.	Average temperature.	Minimum.	Maximum.
100 to 109.9 cm	3	99.6	99.3	99.8	2	99.3	98.2	100.4
110 to 119.9 cm	6	99.7	99.4	99.9	12	99.9	99.0	100.8
120 to 129.9 cm	16	99.0	97.6	99.7	21	99.3	98.2	100.6
130 to 139.9 cm	32	98.9	97.3	99.8	27	99.1	97.9	100.1
140 to 149.9 cm	32	98.8	97.0	99.5	40	98.7	97.2	99.9
150 to 159.9 cm	24	98.9	97.9	99.7	51	98.7	97.3	99.9
160 to 169.9 cm	33	98.8	97.3	99.5	13	98.6	97.8	99.3
170 to 179.9 cm	11	98.9	98.0	100.1	......	....	....	....



RESPIRATION AND TEMPERATURE IN RELATION TO STATURE IN THE INDIAN CHILD

Temperature in relation to stature—Continued

PIMA

Stature.	Male.				Female.			
	Subjects.	Average temperature.	Minimum.	Maximum.	Subjects.	Average temperature.	Minimum.	Maximum.
100 to 109.9 cm	3	99.8	99.2	100.3				
110 to 119.9 cm	4	99.9	99.5	100.3	5	99.9	99.5	100.6
120 to 129.9 cm	12	99.7	99.4	99.9	18	99.8	99.1	100.3
130 to 139.9 cm	25	99.5	98.7	100.0	28	99.7	99.2	100.3
140 to 149.9 cm	26	99.5	98.9	100.1	35	99.5	98.2	100.4
150 to 159.9 cm	13	99.3	98.9	99.9	39	99.5	98.9	100.1
160 to 169.9 cm	24	98.8	98.5	99.8	6	99.3	98.8	99.6
170 to 179.9 cm	2	99.3	99.3	99.3				

Comparisons of the Indian temperatures obtained with those of white children of similar statures are possible to only a limited extent, owing to lack of suitable data respecting the latter. According to Landois and Stirling[a] the sublingual temperature of white children of from 5 to 9 years of age (about 99 to 123 cm. in stature) averages 37.72° C., equivalent to 99.9° F. This is practically the same as the temperature of the children of similar height among the Indians, with the exception of the Apache boys, for whom the records are slightly lower. In the white adult the temperature in the mouth averages 37.19° C., or 98.9° F. (Landois and Stirling), and that of adolescent Indians is very nearly the same. On the whole, up to adult life, the differences in temperature between the two races are quite insignificant.

As to the differences, in both sexes and in very nearly all the stature groups the temperature in the Pima exceeds by from two-tenths to eight-tenths of a degree that in the Apache. With the females this difference, as will be seen later, extends even to the adults.

Sex differences are not prominent, nevertheless there is a slight excess in temperature in most of the female groups. The taller girls (above about 12 years of age) among the Apache make the exception, showing in three groups a very slightly lower average than the boys. This is probably accidental, for the minima and maxima in these groups suggest a contrary condition with regard to the girls, and there is no inferiority in this respect in the average of the adult females of these people. The following table shows—

Tribal and sex differences in temperature

Stature.	Excess of temperature in Pima over Apache.		Excess of temperature in females over males.	
	Male.	Female.	Apache.	Pima.
110 to 119.9 cm	+0.2	Equal.	+0.2	Equal.
120 to 129.9 cm	+ .7	+0.5	+ .3	+0.1
130 to 139.9 cm	+ .6	+ .6	+ .2	+ .2
140 to 149.9 cm	+ .7	+ .8	− .1	Equal.
150 to 159.9 cm	+ .4	+ .8	− .2	+ .2
160 to 169.9 cm	Equal.	+ .7	− .2	+ .5

---

[a] Human Physiology, Philadelphia, 1892, 414.

To recapitulate: The examinations of pulse, respiration, and temperature in San Carlos Apache and in Pima children more than 110 cm. in height (or more than about 6 years of age) show the following peculiarities:

(*a*) The average pulse is slower than in whites in both sexes and in all the stature groups.

(*b*) There are but minor differences in the pulse rate between the children of the two tribes in groups of similar height.

(*c*) In both of the above-named tribes and in all groups the average pulse rate in the female exceeds that in the male by several beats per minute.

(*a′*) The average frequency of respiration is about the same among the Pima as among the whites, but is slightly less in both sexes and all the groups of the Apache.

(*b′*) The respiration rate is higher in both sexes and in all groups of the Pima than in similar divisions of the Apache, but the differences diminish with age.

(*c′*) The rate of respiration is slightly greater in the females of both tribes than in the males.

(*d′*) The pulse-respiration ratio is slightly higher among the Apache children in all the divisions than among those of the Pima and in both tribes it is very slightly higher in the females than in the males. The ratio shows no material or regular differences accompanying variations in the stature—that is, in the age of the children—and throughout is lower than in the whites.

(*a″*) The temperature (sub lingua) differs on the whole but little from that of whites.

(*b″*) The temperature is slightly higher in nearly all the divisions of the Pima than in the corresponding groups of the Apache.

(*c″*) The temperature is very slightly higher in the majority of the groups in the females than in the males.[a]

Muscular force.—All the tests for muscular force were made with a Collin[b] dynamometer, the same instrument being used throughout the examinations. The pressure tests were made with the subject in a standing posture holding the hand and forearm free from the body, exerting the maximum pressure on the instrument by squeezing it, first in the right hand and then in the left. The traction force was tested by the subject in a standing posture, hooking his medii into the ends of the dynamometer and exerting the maximum traction, without raising the instrument above the chin.[c] Repeated trials for both pressure and traction were made in many instances. There was but little misunderstanding on the part of the children of what was desired; usually the testing was soon looked on by them as a sport; this attitude assured the best exertions of every individual. Owing to the nature of the instruments, the records probably do not represent the force in kilograms with absolute accuracy,[a] and they should not be compared with data obtained with dynamometers of other construction. These records are of value, however, when compared with records of tests secured by the use of instruments of the same make and by the same method.

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[a] For further details consult general table at the end of the chapter, and for individual variations and sets of observations see tables in Appendix.

[b] The instrument is identical with that made by Mathieu, of Paris.

[c] If raised above this height, it is possible to augment the record.

The average results of the tests outlined above of the Indian children are as follows:

Pressure and traction force in Indian children and adolescents in relation to stature

Stature.	Pressure.								Traction.			
	Right hand.				Left hand.							
	Apache.		Pima.		Apache.		Pima.		Apache.		Pima.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
	kg.	*kg.*	*kg.*	*kg.*	*kg.*	*kg.*	*kg.*	*kg.*	*kg.*	*kg.*	*kg.*	*kg.*
110 to 119.9 cm	7.0	9.3	4.4	3.75	6.0	7.9	3.8	4.0	1.0	1.4	1.0	1.5
120 to 129.9 cm	12.5	11.1	13.4	9.8	11.0	9.5	12.3	8.9	3.5	2.1	3.1	1.4
130 to 139.9 cm	14.8	13.8	15.9	13.4	13.8	11.9	14.6	11.7	5.6	3.9	5.4	2.4
140 to 149.9 cm	18.9	19.6	19.4	17.2	16.5	17.5	17.0	14.9	9.2	9.4	8.4	5.8
150 to 159.9 cm	25.9	24.8	28.6	22.7	23.7	21.9	24.2	19.9	15.1	14.6	14.2	11.5
160 to 169.9 cm	36.4	27.9	38.5	29.3	33.9	25.0	34.2	25.8	22.7	18.7	22.6	16.3
170 to 175.0 cm	44.0	......	46.3	......	39.3	......	39.0	......	26.6	......	24.7	......

Data on whites for comparison with these interesting results are very meager. There are certain dynamometric observations on white children recorded in literature,[b] but either the manner of presentation or the method used does not quite agree with that of the present author or there is some doubt about the instrument employed, so that the data can not well be utilized in this connection. In 1897–98 the writer made dynamometric determinations on 908 white children of both sexes, of the New York Juvenile Asylum,[c] the instrument and the method employed being similar to those used by him with the Indians. The results embodied in comparative form are given in the following table:

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[a] As to accuracy of the Mathieu and Collin instruments, see Manouvrier, Sur quelques erreurs dynamométriques, *Bull. Soc. d'Anthropol. de Paris*, 3 sér., VII, 1884, 271 et seq.

[b] Of particular value are those of Dementyeff, in Razvitie mishechnoi sili chelovieka, etc. (Development of Muscular Force in Man in connection with his General Physical Development), 1 vol., 8°, Moskva, 1889, with bibliography. See also Kotelmann, messungen an Hamburger gymnasisten, Zeitschr. d. Königl. preuss. statist. Bureaus, 1877; and Riccardi, P., Intorno a la forza muscolare di compressione, (mano diritta e mano sinistra) studiata in una serie di maschi Bolognesi, Rassegna di sc. med., Modena, 1887, II, 206–214. The data obtained by Riccardi are abnormally high.

[c] Hrdlička, A., Anthropological Investigations on One Thousand White and Colored Children of Both Sexes, New York and Albany, Wynkoop-Hallenbeck-Crawford Co., 1899, 45–47.

Comparison as to force between the Indian children and the white children of the New York Juvenile Asylum

Stature.	Pressure, right hand.			Traction.		
	White children, New York Juvenile Asylum.	Apache.	Pima.	White children, New York Juvenile Asylum.	Apache.	Pima.
MALES.	*kg.*	*kg.*	*kg.*	*kg.*	*kg.*	*kg.*
120 to 129.9 cm	11.0-15.0	12.5	13.4	7.0-12.0	3.5	3.1
130 to 139.9 cm	15.0-17.0	14.8	15.9	12.0-14.0	5.6	5.4
140 to 149.9 cm	17.0-24.0	18.9	19.4	14.0-16.0	9.2	8.4
150 to 159.9 cm	24.0-32.0	25.9	28.6	16.0-21.0	15.1	14.2
FEMALES.						
120 to 129.9 cm	10.0-12.5	11.1	9.5	6.5- 9.0	2.1	1.4
130 to 139.9 cm	12.5-17.0	13.8	11.9	9.0-10.5	3.9	2.4
140 to 149.9 cm	17.0-21.0	19.6	17.2	10.5-13.0	9.4	5.8

The white children of both sexes within the heights included are on the average slightly superior in pressure force to the Indians of similar stature and markedly superior in traction force. The height groups of the somewhat retarded Juvenile Asylum children represent an average age probably from one to two years greater than that of the children in corresponding stature groups of the Indians, and on this account the series is not satisfactory.

Tests on older adolescents have shown the persistence in the Indian of a somewhat inferior pressure force; the traction power, however, increases rapidly in the Indian subjects after they have been employed in physical labor and may equal that of whites of similar ages or statures and occupations.[a]

The differences in force between the subjects of the two tribes under comparison are very clear and in the females quite marked. The Apache children on the whole seem the more vigorous; they are in all the groups superior in traction, and the females surpass the Pima females in every particular. Curiously, however, the Pima boys show in all the groups and in both hands a slightly greater average pressure. Possibly this feature has been developed by differences in occupation afforded the school boys on the two reservations.

Force in Pima boys contrasted with that in Apache boys, main groups

Stature.	Average excess in Pima boys in pressure.		Average deficiency in Pima boys in traction.
	Right hand.	Left hand.	
	kg.	*kg.*	*kg.*
120 to 129.9 cm	+0.9	+1.3	−0.4
130 to 139.9 cm	+1.1	+ .8	− .2
140 to 149.9 cm	+ .5	+ .5	− .8
150 to 159.9 cm	+2.7	+ .5	− .9
160 to 169.9 cm	+2.1	+ .3	− .1

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[a] See the subject under Adults, p. 143.

Force in Pima girls contrasted with that in Apache girls

Stature.	Average deficiency in Pima girls in pressure.		Average deficiency in Pima girls in traction.
	Right hand.	Left hand.	
	kg.	*kg.*	*kg.*
120 to 129.9 cm	−1.3	−0.6	−0.7
130 to 139.9 cm	− .4	− .2	−1.5
140 to 149.9 cm	−2.4	−2.6	−3.5
150 to 159.9 cm	−2.1	−2.0	−3.1

The sex differences in both tribes under consideration are pronounced, particularly between the taller girls and the young men of corresponding size.

Another class of observations of value which, were there sufficient data on other children, would make possible very interesting comparisons, is on the pressure force of the hands and the arms with relation to the weight of the body. Dividing each of the force records by the weight gives the fraction of kilogram of the former to each kilogram of the latter. The average results of this class obtained from the data on the Indian children examined by the writer are given in the succeeding table, and in the curves to be found on plates xv and xvi).

Average force, in grams, for each kilogram of weight, in the principal stature groups

APACHE

Stature.	Male.			Female.		
	Pressure.		Traction.	Pressure.		Traction.
	Right hand.	Left hand.		Right hand.	Left hand.	
120 to 129.9 cm	422	372	118	402	344	76
130 to 139.9 cm	446	416	169	419	362	118
140 to 149.9 cm	475	415	231	477	426	228
150 to 159.9 cm	536	491	312	477	421	281
160 to 169.9 cm	621	578	387	471	422	316
170 to 179.9 cm	699	625	423	....	....	....

PIMA

Stature.	Male.			Female.		
	Pressure.		Traction.	Pressure.		Traction.
	Right hand.	Left hand.		Right hand.	Left hand.	
120 to 129.9 cm	480	441	111	369	336	53
130 to 139.9 cm	486	446	165	409	357	73
140 to 149.9 cm	491	430	213	401	347	135
150 to 159.9 cm	584	494	289	425	372	215
160 to 169.9 cm	669	595	393	472	416	271
170 to 179.9 cm	707	595	378	....	....	....

The main features brought out by these force-weight comparisons (pls. xv, xvi) are much like those obtained by contrasting force with stature. There are seen again the preponderance of male over female and the somewhat greater strength of the Apache of both sexes in all respects except in so far as pressure force among the boys is concerned; in this last-named characteristic the Pima youth are superior.

Of special interest are the hand-pressure results obtained from left-handed individuals. It was found that among the 13 left-handed Apache the right hand was stronger in 5, the left hand in 8, and among the 9 left-handed Pima children the right hand was stronger in 2, the left in 7. On the other hand, there were a number of right-handed children in whom the pressure force in the two hands was equal, and in 12 right-handed Apache and 7 Pima the left hand was the stronger. The cases are given in detail below. The irregularities agree with what was before observed by the writer as the result of investigations among the white children of the New York Juvenile Asylum.[a]

Pressure force in left-handed and in exceptional right-handed individuals

Left-handed individuals.				Right-handed individuals (exceptional).			
No.		Pressure force (in kilograms).		No.		Pressure force (in kilograms).	
		Right hand.	Left hand.			Right hand.	Left hand.
524	Apache boy	13.0	17.0	541	Apache boy	19.0	20.0
529	.....do	16.0	18.0	548	.....do	17.5	18.0
591	.....do	22.0	22.5	553	.....do	20.0	20.5
592	.....do	23.5	24.5	568	.....do	24.0	25.0
597	.....do	32.0	34.0	577	.....do	23.0	26.0
618	.....do	42.0	42.5	590	.....do	32.5	37.5
633	.....do	43.5	39.0	601	.....do	39.0	40.0
639	.....do	44.0	43.5	612	.....do	30.5	35.0
642	.....do	41.5	35.5	622	.....do	31.5	35.0
707	Apache girl	15.5	14.0	624	.....do	31.0	34.0
731	.....do	16.0	16.5	719	Apache girl	12.5	13.0
782	.....do	29.5	27.0	737	.....do	19.5	20.0
788	.....do	21.5	23.0	758	.....do	17.5	19.0
137	Pima boy	11.0	12.0	105	Pima boy	15.0	16.0
139	.....do	13.5	15.0	110	.....do	14.5	16.0
154	.....do	15.5	13.5	114	.....do	15.0	15.5
168	.....do	24.5	23.5	119	.....do	15.0	16.0
180	.....do	23.5	25.0	238	Pima girl	5.0	6.0
197	.....do	35.0	36.0	351	.....do	16.5	17.0
204	.....do	37.5	38.0	371	.....do	25.0	25.5
244	Pima girl	9.5	12.0				
328	.....do	13.0	20.0				

Growth.—The lack of records of actual age makes all determinations based on this criterion impossible, which is particularly regrettable in so far as it concerns the period near puberty; it is known that, at this time, white girls surpass the boys in both stature and weight.

Height sub- and supra-ischia.—The average percentages of the height above ischia (height sitting) in the children of the two tribes were as follows (see also pl. XVII):

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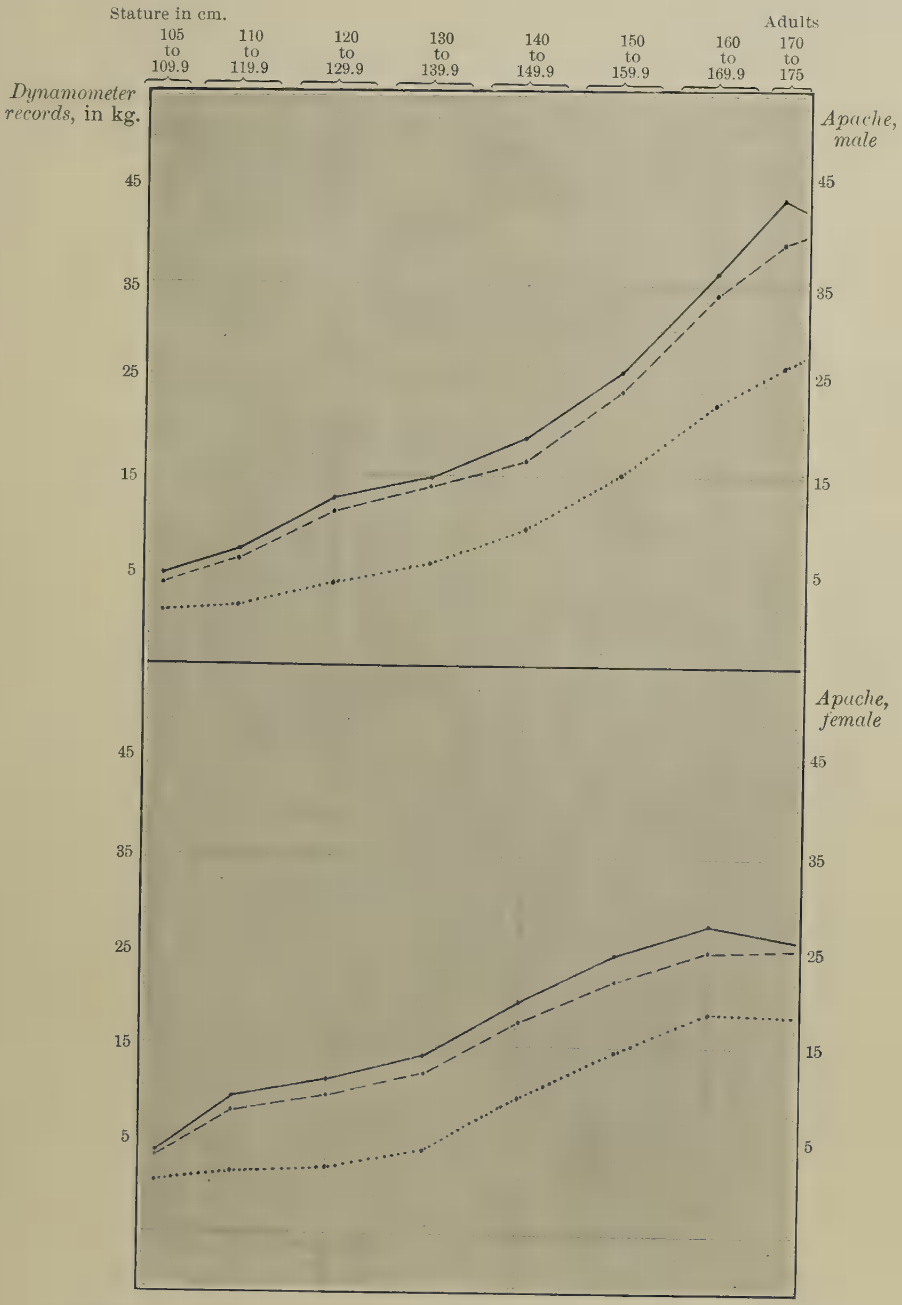
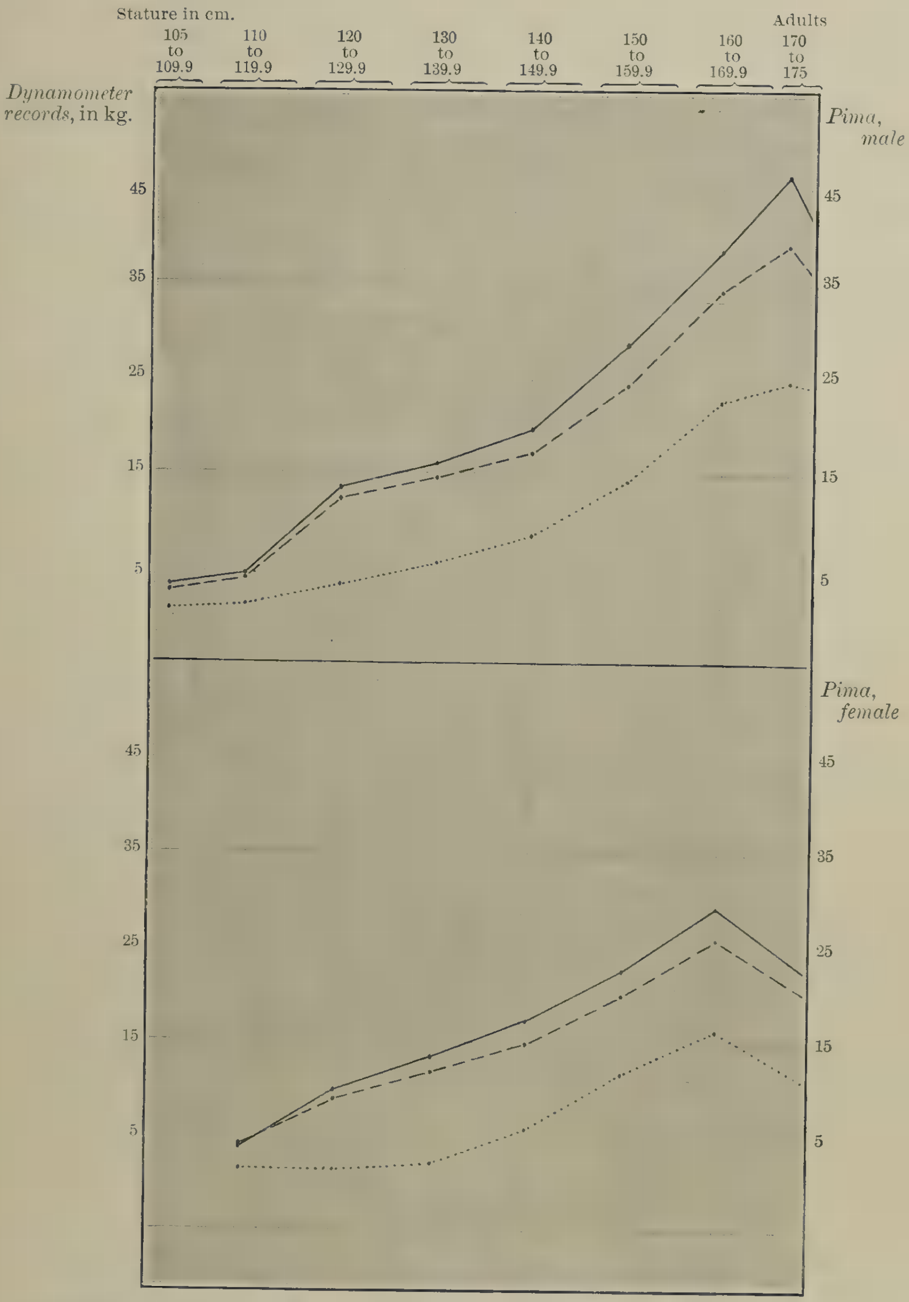
[a] Anthropological Investigations on One Thousand White and Colored Children of Both Sexes, New York and Albany, Wynkoop-Hallenbeck-Crawford Co., 1899, 44–47.



—— Pressure (maximum) in right hand — — — Pressure (maximum) in left hand . . . . . Traction

MUSCULAR FORCE IN HANDS AND ARMS IN RELATION TO STATURE IN THE INDIAN CHILD



——— Pressure (maximum) in right hand — — — Pressure (maximum) in left hand . . . . . Traction

MUSCULAR FORCE IN HANDS AND ARMS IN RELATION TO STATURE IN THE INDIAN CHILD

Height (sitting) supra ischia in relation to stature

Stature.	San Carlos Apache.		Pima.		Excess of Apache over Pima.	
	Male.	Female.	Male.	Female.	Male.	Female.
	cm.	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*
110 to 119.9 cm	55.1	55.8	55.6	54.5	−0.5	+1.3
120 to 129.9 cm	54.6	54.2	53.7	54.0	+ .9	+ .2
130 to 139.9 cm	53.8	53.8	52.8	52.9	+1.0	+ .9
140 to 149.9 cm	52.3	53.3	52.3	52.8	0	+ .5
150 to 159.9 cm	52.1	53.5	52.4	53.3	− .3	+ .2
160 to 169.9 cm	52.3	52.4	52.3	52.6	0	− .2
Adults	53.2	52.8	52.9	52.3	+ .3	+ .5

The height of the Apache above the ischia, it is seen, exceeds that of the Pima in both sexes and in most of the stature groups, but the differences are too small to be of much importance. It is difficult to account for this peculiarity, which extends to the adults; it is possibly connected with former differences in nutrition in the two tribes, which were in favor of the Pima. The thickness of clothing worn by the school children was practically the same, and a like statement may be made regarding the conditions under which the measurements were taken.

Rate of increase of height above ischia for each 10 cm. increase in stature

Stature.	Apache.		Pima.	
	Male.	Female.	Male.	Female.
	cm.	*cm.*	*cm.*	*cm.*
120 to 129.9 cm	+5.4	+3.9	+5.6	+5.0
130 to 139.9 cm	+3.0	+4.3	+3.4	+4.1
140 to 149.9 cm	+3.6	+4.7	+4.3	+5.2
150 to 159.9 cm	+4.7	+4.8	+5.3	+5.1
160 to 169.9 cm	+5.9	+2.9	+5.3	+3.3
170 cm. to adult	+4.3	....	+4.7	....

There is noticeable slowness in growth of the upper part of the body in all divisions between the heights of 130 and 139.9 cm.; there is a period of relatively rapid growth from 140 to 159.9 cm. of stature in the females and from 150 to 169.9 cm. in the males; then a decrease, particularly in the females, is again apparent.

The percentage of the height supra ischia to the total height, as shown by the accompanying figures, diminishes in both sexes and in all the groups up to the stature of 150 cm., corresponding to about 14 years of age, a condition which points to a relative preponderance up to that age of the growth of the lower limbs. Thereafter the upper part of the body shows in most of the groups a slight augmentation in its relation to the whole stature, in other words a condition which clearly indicates at these periods a relatively diminished growth of the lower limbs.

Variations in percentage of height supra ischia to total height in 10-cm. groups of latter

Stature groups.	Between stature groups.	Apache.		Pima.	
		Male.	Female.	Male.	Female.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
A. 110 to 119.9 cm	A and B	−0.5	−1.6	−1.9	−0.5
B. 120 to 129.9 cm	B and C	− .8	− .4	− .9	−1.1
C. 130 to 139.9 cm	C and D	−1.5	− .5	− .5	− .1
D. 140 to 149.9 cm	D and E	− .2	+ .2	+ .1	+ .5
E. 150 to 159.9 cm	E and F	+ .2	−1.1	− .1	− .7
F. 160 to 169.9 cm. (or adult in females)	F and G	+ .9	+ .4	+ .6	− .3
G. 170 cm. to adult in males					

As to the percentage of the body above the ischia to the whole stature in the male and the female children, the following differences appear:

Excess of females over males in ratio to height of body above ischia

Stature.	Apache.	Pima.	Stature.	Apache.	Pima.
	Per cent.	*Per cent.*		*Per cent.*	*Per cent.*
110 to 119.9 cm	+0.7	−0.9	150 to 159.9 cm	+ .4	+0.9
120 to 129.9 cm	− .4	+ .3	160 to 169.9 cm	+ .1	+ .3
130 to 139.9 cm	0	+ .1	Adults	− .4	− .6
140 to 149.9 cm	+1.0	+ .5			

In most of the groups, in the females the percentage of the height of the body supra ischia is slightly greater, and that of the lower limbs slightly less, than it is in the males. This condition is especially marked in the stature divisions of 140 to 149.9 and 150 to 159.9 cm., or in children from a little more than 12 to a little more than 15 years of age. These statures and years embrace in the Indian girls of the tribes included in the present studies almost the entire period of puberty.

Weight.—All the children were weighed bareheaded and in their ordinary school clothing, of moderate weight, not exceeding at the maximum about 4 kilograms.[a] The average results in the main stature groups are given in the following table, accompanied by the weights of white children of similar statures. The data for the latter were obtained from Professor Bowditch's tables[b] on Boston school children of all nationalities.

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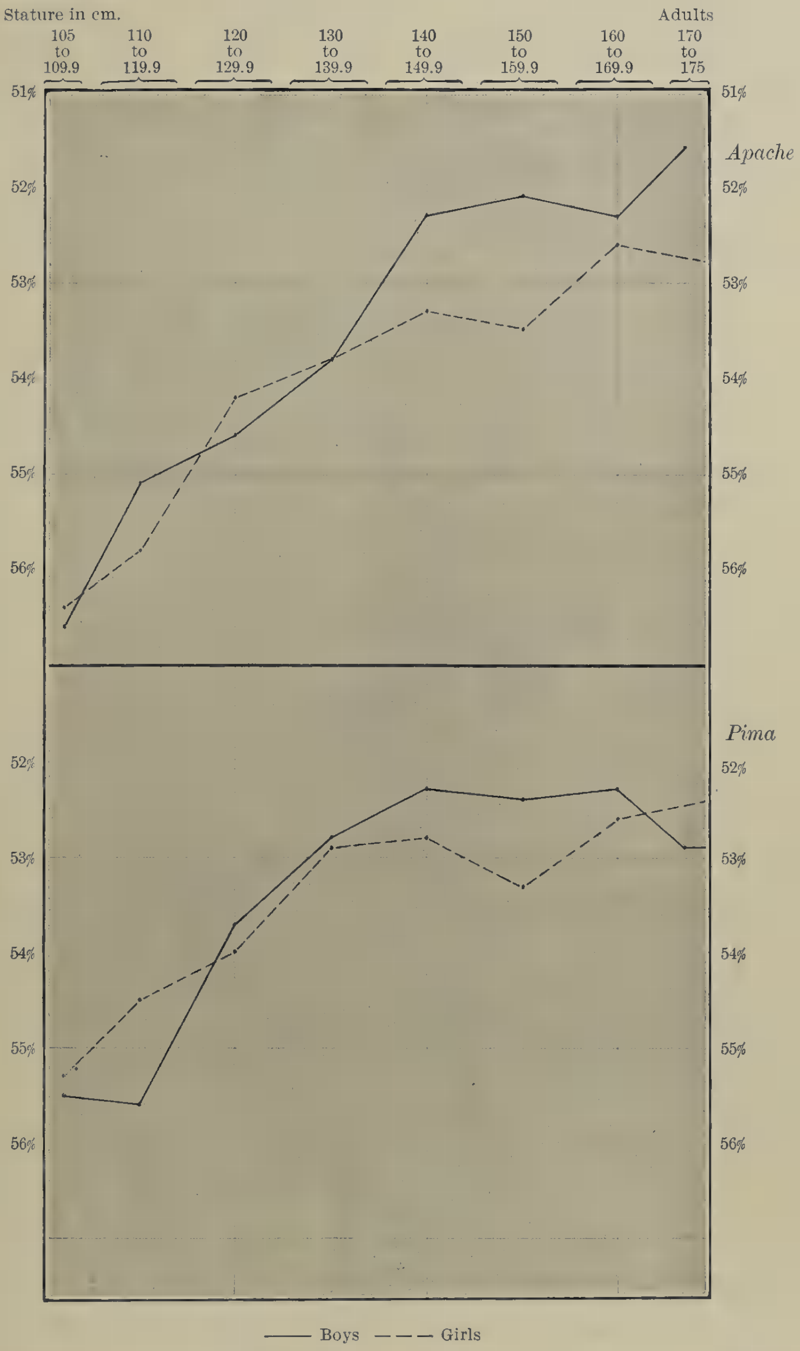
[a] The stature of the subject was invariably measured with the shoes off and the weight with the shoes on.

[b] Bowditch, H. P., The Growth of Children, *Eighth Annual Report of State Board of Health, Massachusetts*, Boston, 1877, 40–47. This valuable work contains references to German and English children.



HEIGHT SITTING IN RELATION TO STATURE IN THE INDIAN CHILD

Average weights of white and Indian children by stature groups

Stature.	Whites.		San Carlos Apache.		Pima.	
	Male.	Female.	Male.	Female.	Male.	Female.
	kg.	*kg.*	*kg.*	*kg.*	*kg.*	*kg.*
120 to 129.9 cm	24.0–29.0	23.4–28.2	29.6	27.6	27.9	26.5
130 to 139.9 cm	29.0–34.9	28.2–34.5	33.2	32.9	32.7	32.8
140 to 149.9 cm	34.9–42.0	34.5–41.5	39.8	41.1	39.5	42.9
150 to 159.9 cm	42.0–50.0	41.5–52.5	48.3	52.0	49.0	53.4
160 to 169.9 cm	50.0–60.5	....	58.6	....	57.5	....

The weight of the Indian children of both tribes and both sexes, and of all the stature groups, compares favorably with that of the whites; it is, in fact, almost throughout greater than would be the mean in the various groups of whites. It was seen that the younger Indian children also exceeded in weight white children of similar ages. This excess consists probably in a larger amount of the reserve elements, mainly fat; the force tests, which have shown results rather unfavorable to the Indian, do not indicate any excess in musculature on their part.

There are certain differences in weight between the children of the two tribes (pl. XVIII):

Average excesses and deficiencies of weight in grams to each centimeter of stature in the San Carlos Apache compared with the Pima children

Stature.	Male.	Female.	Stature.	Male.	Female.
120 to 129.9 cm	+13	+11	150 to 159.9 cm	−3	−10
130 to 139.9 cm	+ 6	+ 2	160 to 169.9 cm	+6	−17
140 to 149.9 cm	+ 6	−13			

The table shows that at almost all stages the Apache boys are the heavier. Up to about 12½ years of age the Apache girls are slightly heavier, but from then on, even into adult life, they are exceeded in weight by the Pima. This agrees well with general observations, which reveal among the latter a larger proportion than among the Apache of stout girls among those in whom the period of puberty has been passed, up to full womanhood.

It may be observed, by reference to the force tests, that muscular power, especially hand pressure, does not stand in close relation to the weight of the body. This suggests that the intertribal differences in weight in the same stature groups, like those between Indian and white children, are due in the main to differences in fat deposits.

Sex differences in weight show (see Average weights, etc., table, above) that, as among whites, there is reached in the Indian children a period when the average weight of the girls exceeds that of the boys of the same stature; but this period in both the Apache and the Pima is reached earlier than in the whites by approximately one decimal stature group, or about two years. This corresponds, as will be seen later (under Menstruation, pp. 126–127), with the earlier puberty in the Indian girl.

The data on weight were further utilized to obtain a view of the relation between the increase in weight and the increase in stature, with the following results:

Gain in weight in grams for each centimeter (= gc.) of stature

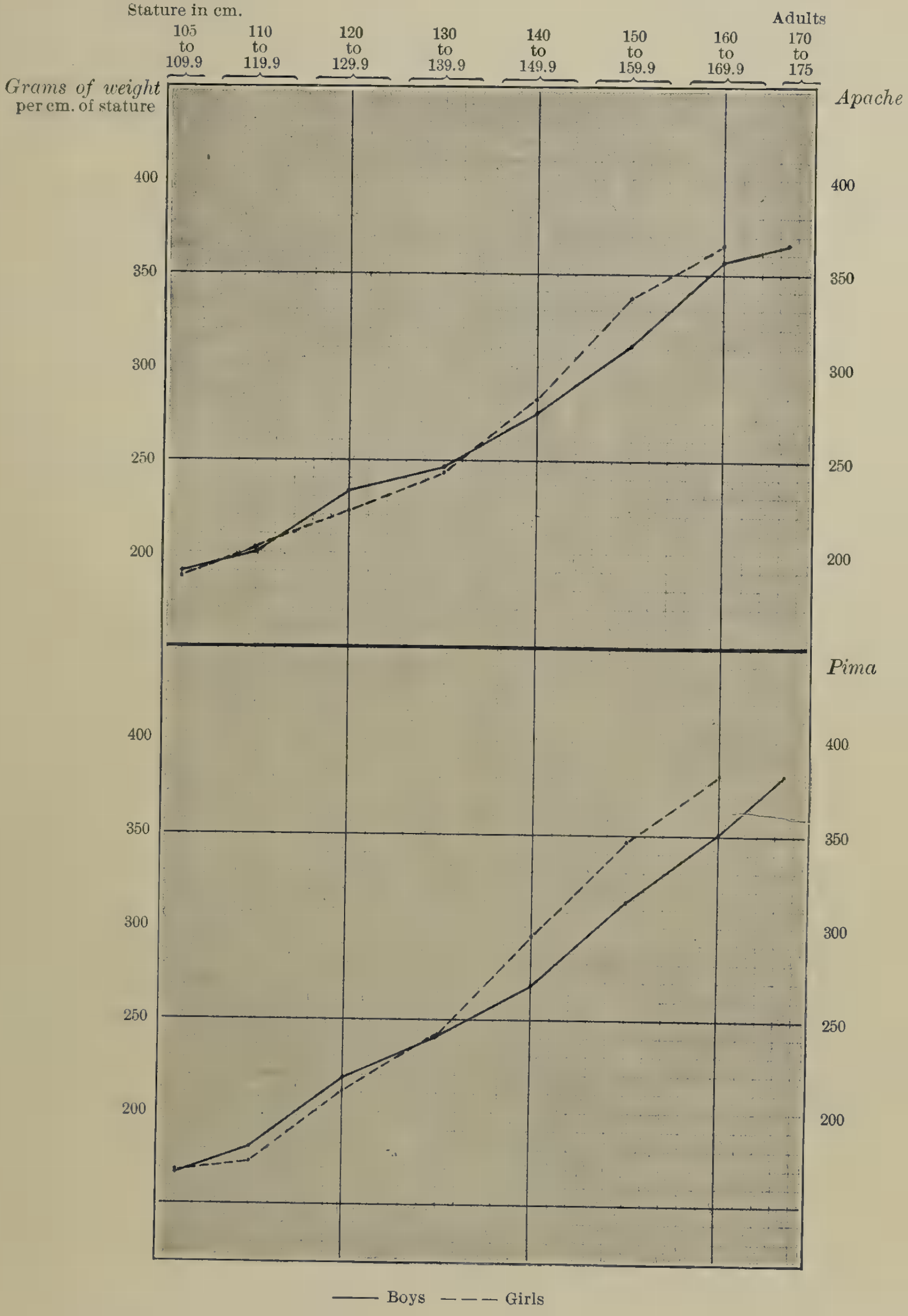
Stature.	Excess over preceding stature group.			
	San Carlos Apache.		Pima.	
	Male.	Female.	Male.	Female.
	gc.	*gc.*	*gc.*	*gc.*
120 to 129.9 cm	+33	+21	+38	+38
130 to 139.9 cm	+14	+22	+22	+31
140 to 149.9 cm	+28	+38	+28	+53
150 to 159.9 cm	+36	+55	+45	+52
160 to 169.9 cm	+46	+28	+37	+35

The figures show that there is a fair increase in relative weight between the statures of 120 and 129.9 cm. (about 8 to 10 years), followed in all the children by a diminution in the increase in the next group (130 to 139.9 cm. equals about 10 to 12 years in age) and rising again thereafter. The maximum augmentation in relative weight is attained in the females of both tribes in the two stature groups of from 140 to 159.9 cm. (approximately 12 years and older) and in the males of both tribes in the two stature groups of from 150 to 169.9 cm. (approximately 14 to 18 years), that is, about at, or more likely after, puberty.

Growth of the head.—In absolute measurements the three principal diameters of the head increase in the Indian child through the various stature groups as follows:

Diameter antero-posterior maximum (glabello-occipital), average

Stature.	San Carlos Apache.		Pima.		Excess in Pima over Apache.		Excess in males over females.	
	Male.	Female.	Male.	Female.	Male.	Female.	Apache.	Pima.
	cm.	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*
110 to 119.9 cm	17.0	17.0	17.7	17.2	+0.7	+0.2	0	+0.5
120 to 129.9 cm	17.3	16.8	17.7	17.4	+ .4	+ .6	+ .5	+ .3
130 to 139.9 cm	17.5	17.1	18.1	17.6	+ .6	+ .5	+ .4	+ .5
140 to 149.9 cm	17.4	17.4	18.3	17.8	+ .9	+ .4	0	+ .5
150 to 159.9 cm	17.8	17.5	18.4	17.9	+ .6	+ .4	+ .3	+ .5
160 to 169.9 cm	18.0	....	18.6	....	+ .6	....	+ .4	....
Adults	18.7	17.5	19.2	18.3	+ .5	+ .8	+1.2	+ .9



WEIGHT IN RELATION TO STATURE IN THE INDIAN CHILD

The increase of the length of the head continues, it is seen, without much irregularity throughout childhood and adolescence. The most pronounced augmentation occurs in the males between the period of later adolescence and that of adult age; this change is undoubtedly due to the development of the region of the frontal sinuses and the glabella.

In the Pima of both sexes and of all the stature groups the antero-posterior diameter of the head is longer than in the Apache, but this is a result of a difference in shape of the head and not in its size as a whole.

In the males the length of the head at nearly every stage is a little greater than in the females of the same stature. The difference is quite uniform during childhood and earlier adolescence, but becomes more marked at the completion of growth, owing in the case of the adult males to excess of development in the region of the frontal sinuses.

Data bearing on the subject, arranged by stature groups, is here set forth:

Diameter lateral maximum

Stature.	San Carlos Apache.		Pima.		Defect in Pima to Apache.		Excess in males over females.	
	Male.	Female.	Male.	Female.	Male.	Female.	Apache.	Pima.
	cm.	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*
110 to 119.9 cm	15. 2	14. 7	14. 0	13. 5	−1. 2	−1. 2	+0. 5	+0. 5
120 to 129.9 cm	15. 1	14. 9	14. 0	13. 4	−1. 1	−1. 5	+ .2	+ .6
130 to 139.9 cm	15. 1	15. 0	13. 8	13. 7	−1. 3	−1. 3	+ .1	+ .1
140 to 149.9 cm	15. 2	15. 1	13. 9	13. 9	−1. 3	−1. 2	+ .1	0
150 to 159.9 cm	15. 6	15. 3	14. 2	14. 2	−1. 4	−1. 1	+ .3	0
160 to 169.9 cm	15. 9	....	14. 4	....	−1. 5	....	....	....
Adults	15. 8	15. 5	14. 7	14. 4	−1. 1	−1. 1	+ .3	+ .3

The maximum horizontal breadth of the head follows the growth of the body somewhat less regularly than does the length. There is, apparently, but little advance in this dimension in the lower stature groups, the main increase taking place after the children have reached the height of 150 cm. This condition may be observed in all the divisions.

As to differences between the two tribes, the conditions are the reverse of what they are with respect to the length of the head. As to sex, in males the breadth of the head, like its length, is at nearly every point in growth a little greater than in the females of the same height. In both the tribes dealt with in this paper the differences are least in the case of children ranging from 140 to 150 cm. in stature.

Height of head (biauricular line-bregma)[a]

Stature.	San Carlos Apache.		Pima.		Excess in Pima over Apache.		Excess in males over females.	
	Male.	Female.	Male.	Female.	Male.	Female.	Apache.	Pima.
	cm.	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*
110 to 119.9 cm........	12.7	12.5	12.8	12.4	+0.1	−0.1	+0.2	+0.4
120 to 129.9 cm........	12.8	12.6	12.8	12.5	0	− .1	+ .2	+ .3
130 to 139.9 cm........	12.8	12.3	13.1	12.6	+ .3	+ .3	+ .5	+ .5
140 to 149.9 cm........	13.0	12.8	13.2	12.9	+ .2	+ .1	+ .2	+ .3
150 to 159.9 cm........	13.3	12.9	13.3	13.1	0	+ .2	+ .4	+ .2
160 to 169.9 cm........	13.4	....	13.5	....	+ .1	....	....	....
Adults........	13.5	13.0	13.8	13.4	+ .3	+ .4	+ .5	+ .4

[a] Obtained by a spreading and a sliding compass. The branches of a suitable compass d'epaisseur are introduced well into the auditory meati and allowed to rest on their floor. The expansion of the instrument is noted, with the scale held over the bregma region; the distance from the bregma region to the lower edge of the scale is measured by the rod of the compas glissière, and a simple arithmetical process gives the biauricular line-bregma height. With practice the measurement becomes easy, rapid, and at least as reliable as the measure of the same height by any other method. With due care, particularly as to the temperature of the instrument, the branches of the compass in the ears cause but very little discomfort. The writer has used this method for many years with satisfactory results.

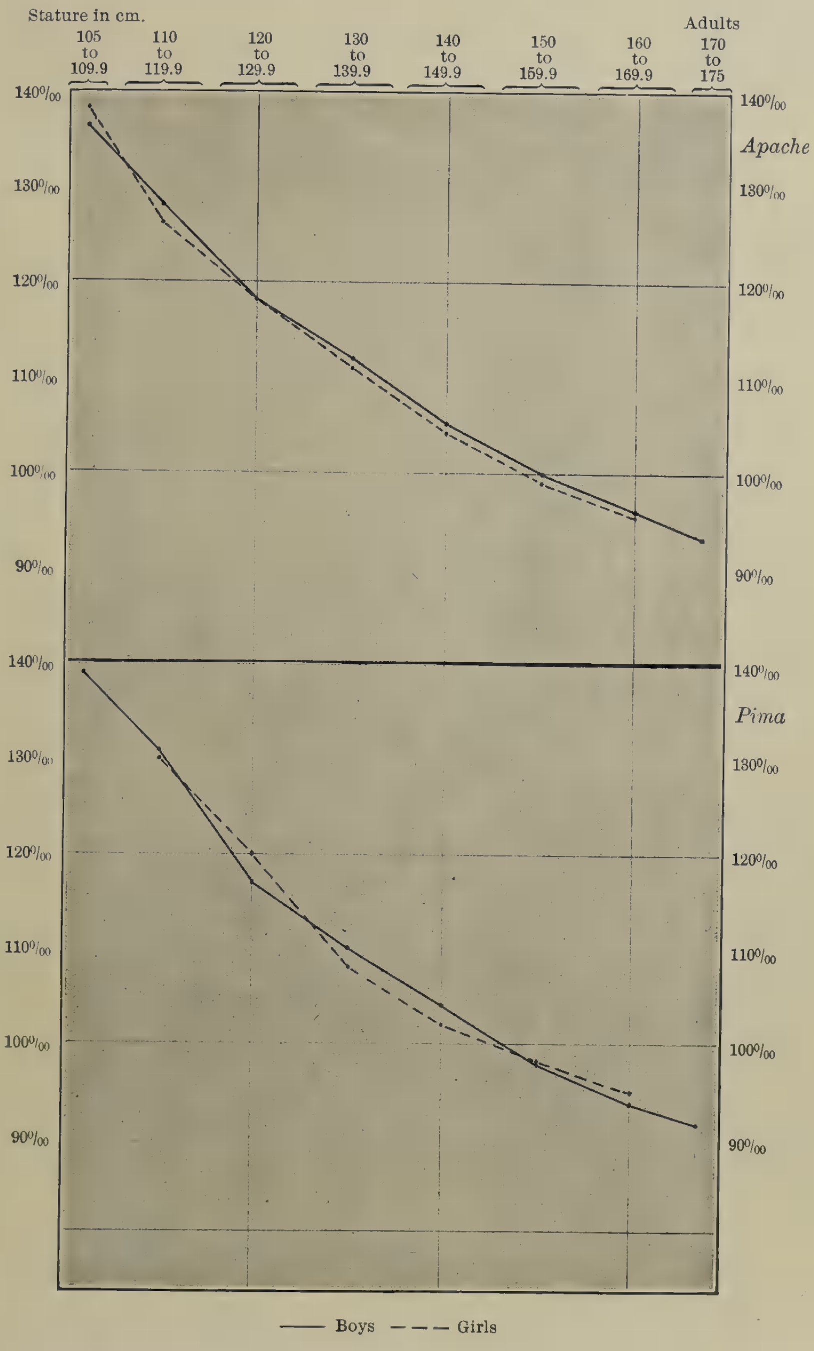
The preceding tables show that the height of the head increases slowly and quite regularly up to full adult age. In nearly all cases it is slightly greater in the Pima than in the Apache, the difference being most marked in the adults. In the several stature groups this measurement is found to be greater also in the males than it is in the females.

To summarize: (1) It is found that in the Apache and the Pima the three principal diameters of the head increase slowly and without much irregularity throughout childhood and adolescence until full adult life. In this important phase of development there is no radical difference as compared with the whites.

(2) The proportion between the three diameters differs in the two tribes. The Apache children and the adolescents of both sexes and of all stature groups show less length, decidedly greater breadth, and less height of the head, than the Pima.

(3) Sex differences in the two tribes are uniform, showing throughout the period of growth and into adult life a slight excess for the males in all the diameters.

The relation of the three head diameters to one another may be shown to advantage throughout the different stature groups by representing the measurements in their relation to their mass taken as 100, as in the succeeding table. These measurements show how small are the changes in the relative values of the three dimensions throughout a large part of the period of growth. This is manifest also in the indexes calculated from the measurements (see general tables at end of chapter).



MEAN CEPHALIC DIAMETER (CEPHALIC MODULE) IN RELATION TO STATURE (S=1,000) IN THE INDIAN CHILD

Per centum relations of the three principal cephalic diameters, by stature groups

(The three measurements combined=100)

Stature.	Diameter antero-posterior maxim.				Diameter lateral maxim.				Height of the head.			
	Apache.		Pima.		Apache.		Pima.		Apache.		Pima.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
110 to 119.9 cm...........	37.9	38.4	39.8	39.9	33.8	33.2	31.4	31.3	28.3	28.4	28.8	28.8
120 to 129.9 cm...........	38.3	37.9	39.8	40.2	33.4	33.6	31.4	30.9	28.3	28.5	28.8	28.9
130 to 139.9 cm...........	38.5	38.5	40.2	40.1	33.3	33.8	30.7	31.2	28.2	27.7	29.1	28.7
140 to 149.9 cm...........	38.2	38.4	40.3	39.9	33.3	33.3	30.6	31.1	28.5	28.3	29.1	29.0
150 to 159.9 cm...........	38.1	38.3	40.1	39.6	33.4	33.5	30.9	31.4	28.5	28.2	29.0	29.0
160 to 169.9 cm...........	38.1	......	40.0	......	33.6	......	30.9	......	28.3	......	29.1	......
Adults.............	38.95	38.0	40.2	39.7	32.9	33.7	30.8	31.2	28.15	28.3	29.0	29.1

The mean of the three principal diameters of the head is known as the cephalic module. This indicates the size of the head and is of much use as a concrete figure in the study of head growth. It is convenient further in contrasting the size of the head with the stature.

The module and its relations to stature are given in the following table and curves (pl. XIX). Of the conditions which these data reveal the continuous growth of the head until full adult life, the slight excess in the size of the Apache head as compared with the Pima head, and of the male head as compared with that of the female, have already been shown.

The module-in-relation-to-stature figures show that the head in relation to the height of the body is largest in the smallest—that is, in the youngest—children, the proportion decreasing steadily with age. In adult and in some of the groups of adolescent females the proportion of head to stature rises and finally exceeds considerably that found among adult males, a fact which shows that head growth in the young women continues even after the cessation of growth in height.

Size of the head, as expressed by the mean diameter of the head, or cephalic module, by stature groups

Stature.	Cephalic module.				Cephalic module in relation to stature (stature=1,000).			
	Apache.		Pima.		Apache.		Pima.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
	cm.	*cm.*	*cm.*	*cm.*				
110 to 119.9 cm.......	14.9	14.6	14.8	14.9	128	126	131	130
120 to 129.9 cm.......	15.1	14.8	14.8	15.1	118	118	117	120
130 to 139.9 cm.......	15.1	14.6	15.0	14.6	112	111	110	108
140 to 149.9 cm.......	15.3	15.1	15.1	14.8	105	104	104	102
150 to 159.9 cm.......	15.6	15.2	15.3	15.1	100	98.9	97.9	98.1
160 to 169.9 cm.......	15.8	15.5	15.5	15.4	96	95.6	93.7	94.9
170 to 175.0 cm.......	15.9	....	15.7	....	93	....	91.7	....
Adults........	16.0	15.35	15.9	15.35	94	97.9	92.3	98.1

Size of the head, as expressed by the mean diameter of the head, or cephalic module, by stature groups—Continued

Stature.	Apache compared with Pima.				Males compared with females.			
	Cephalic module.		Module in relation to stature.		Cephalic module.		Module in relation to stature.	
	Male.	Female.	Male.	Female.	Apache.	Pima.	Apache.	Pima.
	cm.	*cm.*			*cm.*	*cm.*		
110 to 119.9 cm	+0.1	−0.3	−3	−4	+0.3	−0.1	+2.0	+1.0
120 to 129.9 cm	+ .3	− .3	+1	−2	+ .3	− .3	±0.0	−3.0
130 to 139.9 cm	+ .1	± .0	+2	+3	+ .5	+ .4	+1.0	+2.0
140 to 149.9 cm	+ .2	+ .3	+1	+2	+ .2	+ .3	+1.0	+2.0
150 to 159.9 cm	+ .3	+ .1	+2.1	+ .8	+ .4	+ .2	+1.1	− .2
160 to 169.9 cm	+ .3	+ .1	+2.3	+ .7	+ .3	+ .1	+ .4	−1.2
170 to 175.0 cm	+ .2	....	+1.3	....	....	....	....	....
Adults	+ .1	± .0	+1.7	− .2	+ .65	+ .55	−3.9	−5.8

Growth of the face.—The measurement of the face was restricted to its two principal dimensions, namely, height and maximum breadth. The height, measured with the compass d'épaisseur (Mathieu), is the distance from the lowest point of the chin in the median line, the compass being applied with some firmness, to a point corresponding to the nasion. The location of this point is not difficult to determine with fair accuracy if the investigator has a working acquaintance with the location of the naso-frontal suture in children's as well as in adults' skulls.[a]

The breadth is the maximum bizygomatic diameter, measured also with the compass d'épaisseur. This measurement offers no special difficulty in subjects of any age.

The data obtained are arranged in the succeeding form:

Growth of face, by stature groups

Stature.	Height of face.				Diameter bizygomatic maximum.			
	Apache.		Pima.		Apache.		Pima.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
	cm.	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*
110 to 119.9 cm	9.4	9.3	9.4	9.1	12.8	12.6	12.0	11.7
120 to 129.9 cm	9.8	9.7	10.0	9.9	13.1	12.9	12.3	12.2
130 to 139.9 cm	10.0	10.0	10.4	10.2	13.3	13.2	12.8	12.5
140 to 149.9 cm	10.5	10.5	10.7	10.8	13.7	13.6	13.0	13.0
150 to 159.9 cm	11.1	10.9	11.3	11.2	14.1	14.0	13.5	13.5
160 to 169.9 cm	11.6	11.4	11.9	11.5	14.6	14.4	13.9	13.8
170 to 175.0 cm	11.8	....	12.2	....	14.6	....	14.2	....
Adults	11.8	10.8	12.3	11.5	14.9	14.1	14.5	13.8

---

[a] The writer prefers the nasion point as the superior terminus of the facial height measurement to either the obelion or crinion (hair line). The former is always uncertain and the latter is particularly difficult to determine in the younger children, in some of whom much of the forehead is covered by a rather long hair-like down.

Growth of face, by stature groups—Continued

Stature.	Apache compared with Pima.				Males compared with females.			
	Height of face.		Diameter bizygomatic max.		Height of face.		Diameter bizygomatic max.	
	Male.	Female.	Male.	Female.	Apache.	Pima.	Apache.	Pima.
	cm.	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*	*cm.*
110 to 119.9 cm	±0.0	+0.2	+0.8	+0.9	+0.1	+0.3	+0.2	+0.3
120 to 129.9 cm	− .2	− .2	+ .8	+ .7	+ .1	+ .1	+ .2	+ .1
130 to 139.9 cm	− .4	− .2	+ .5	+ .7	±0	+ .2	+ .1	+ .3
140 to 149.9 cm	− .2	− .3	+ .7	+ .6	±0	− .1	+ .1	±0
150 to 159.9 cm	− .2	− .3	+ .6	+ .5	+ .2	+ .2	+ .1	±0
160 to 169.9 cm	− .3	− .1	+ .7	+ .6	+ .2	+ .4	+ .2	+ .1
170 to 175.0 cm	− .4		+ .4					
Adults	− .5	− .7	+ .4	+ .3	+1.0	+ .8	+ .8	+ .7

The foregoing measurements demonstrate, as do those of the head, gradual growth of the face among both the Apache and the Pima, without much irregularity in both principal dimensions, up to a fully adult age.

Except in the youngest children, the Apache face is somewhat lower and especially broader than the Pima face, characteristics which agree with the difference in the length and the breadth of the head in the two tribes.

In most of the groups of the children both dimensions of the face in males are greater than in the females, but the differences are slight—much slighter than in adults. It is seen from the figures in the foregoing table that, in the two tribes under discussion, the growth of the face in the males continues longer than that of the stature, though perhaps not beyond the age at which it ceases in the females.

An interesting comparison is that between the cephalic and the facial index [a] during the growth period. The cephalic index in the males decreases slightly with age, but not in the females; the facial index in both sexes increases with age, in all probability by reason of the growth of the alveolar processes and teeth, the face becoming relatively higher with the increase in stature. As to sex differences, the cephalic index, on account of the development of the frontal sinuses, becomes eventually lower in the males, while the facial index, on account of the greater development in the males of the lower jaw, becomes higher in this sex in adolescence (for graphic illustration, see pl. XX).

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[a] $\text{Cephalic index} = \frac{\text{diam. lateral max. of head} \times 100.}{\text{diam. ant. post. max.}}$

$\text{Facial index} = \frac{\text{facial height} \times 100}{\text{diam. bizygomatic max.}}$

Relation in form between head and face, by stature

Stature.	Cephalic index.				Facial index.				Males compared with females.			
	Male.		Female.		Male.		Female.		Cephalic index (in males).		Facial index (in males).	
	Apache.	Pima.	Apache.	Pima.	Apache.	Pima.	Apache.	Pima.	Apache.	Pima.	Apache.	Pima.
110 to 119.9 cm	89.7	79.5	87.1	78.6	73.3	78.3	73.7	77.8	+2.6	+0.9	−0.4	+0.5
120 to 129.9 cm	86.9	79.5	88.4	76.9	74.9	80.2	74.8	81.0	−1.5	+2.6	+ .1	− .8
130 to 139.9 cm	86.5	76.2	87.7	77.5	75.6	81.9	75.7	82.3	−1.2	−1.3	− .1	− .4
140 to 149.9 cm	87.5	76.4	86.5	76.4	76.6	81.6	77.4	83.2	+1.0	±0	− .8	−1.6
150 to 159.9 cm	87.6	77.2	87.5	79.2	78.9	83.7	77.8	83.1	+ .1	−2.0	+1.1	+ .6
160 to 169.9 cm	86.9	77.3	87.8	78.0	80.0	85.3	79.4	83.5	− .9	− .7	+ .6	+1.8
170 to 175 cm	85.3	......	......	......	80.9	......	......	......	......	......	......	......
Adults	84.9	76.4	88.7	78.8	78.8	84.6	76.4	83.7	−3.8	−2.4	+2.4	+ .9

Dentition considered in relation to stature.—Dentition in Indian children was considered to some extent with the records of subjects of known age. In the series now under consideration we can follow the eruption of the permanent teeth, but, as accurate ages could not be determined, the progress of second dentition must be compared with stature. This procedure is not illogical, but has the disadvantage of a lack of similar data for white children, while records on the progress of dentition by age in whites are plentiful.

On the basis of what is known of the height of white children at different ages it is possible to convert the records by age into those by stature, and the author has followed that course, utilizing Bowditch's and Daffner's data, but the resulting figures can not claim to be more than approximations to accuracy.

The following table affords some basis for comparison:

Second dentition in relation to stature

Permanent teeth.	Whites,[a] appear in average at about—	San Carlos Apache.		Pima.	
		Male.	Female.	Male.	Female.
	Height.	*Height.*	*Height.*	*Height.*	*Height.*
First molars	105 cm	106 cm	106.6 cm	104–115 cm	108 cm.
Median incisors	115–120 cm	110–123 cm	106.6–122 cm	110–125 cm	108–122 cm.
Lateral incisors	120–123 cm	117–129 cm	115–124 cm	115–129 cm	117–126 cm.
First bicuspids	133 cm	118–145 cm	115–142 cm	125–141 cm	129–144 cm.
Second bicuspids	135.5–142 cm	123–150 cm	117–141 cm	125–153 cm	129–144 cm.
Canines	135.5–142 cm	125.5–141 cm	117–142 cm	127–145 cm	125–145 cm.
Second molars	146–152 cm	130–145 cm	126–145 cm	127–145 cm	127–148 cm.
Third molars	When nearly full grown.	165.1 cm. to full grown.	157.3 cm. and upwards.	164.2 cm. and upwards.	150.2 cm. and upwards.

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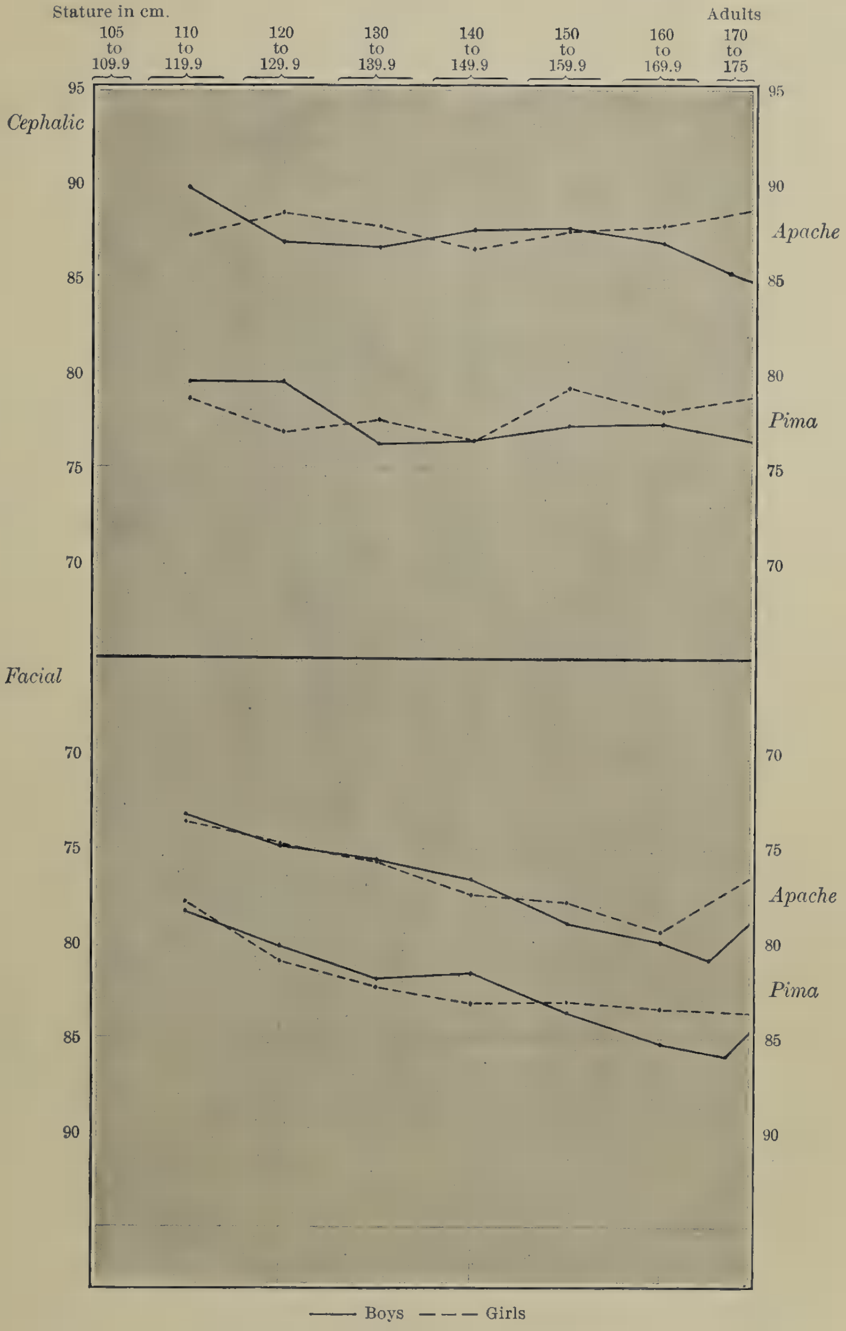
[a] Approximations from data of Daffner (average ages of dentition) and Bowditch (average statures of Boston white school children of all nationalities).



CEPHALIC AND FACIAL INDEXES IN RELATION TO STATURE IN THE INDIAN CHILD

The figures in the column of whites are not exactly the same as those for the Apache or the Pima children; they represent the average approximate stature at which the various teeth appear (the smaller stature corresponding to the earlier, the greater stature to the later, teeth of the same kind), while the figures relating to the Indians deal with the presence of the teeth, the smaller stature being that at which one or more of the teeth concerned were observed for the first time, and the greater that after which all the teeth of the kind dealt with were present regularly.

Notwithstanding the difficulties of proper comparison, the preceding table is quite instructive. With one or two exceptions there appear to be no great discrepancies between the whites and the Indians. The eruption of the first permanent molars seems to occur a little earlier in the whites, but it must be remembered that the number of the Indian children available for comparison was small. The incisors and the bicuspids appear at nearly the same statures in both races. The canines erupt possibly a little earlier in the Indians, and the second molars are decidedly earlier in both of the tribes than in white children. The appearance of the last molars is by no means retarded in the Indians—rather the reverse—but here comparison by stature must be given up, for the heights touch a point where inclusion of adults is possible. Retardation and nonappearance of the last molars occur also among the Indians, but are decidedly less frequent than among the American whites.

The differences in second dentition in the two tribes are insignificant. As to sex, there appears to be a little advantage as to promptness with the females. This is natural in view of the fact that certain statures for this sex represent slightly older individuals than they do for boys.

Dental anomalies.—Two instances only of a dental anomaly were met with in the first dentition, but quite a large number were noticed in the second. A great majority of the abnormalities (all but two) were in the upper jaw and the pre-canine region, consisting mostly of supernumerary cusps or teeth.

The anomalies attending first dentition were in one case the presence of six instead of four incisors (case 464, p. 124) and in the other (case 659, p. 124) a partial confluence of a lateral incisor and a canine. With these may be mentioned persistence of the left lateral lower milk incisor and absence of the tooth of the second dentition, observed in one instance in advanced adolescence (case 626, p. 125).

The anomalies connected with the second dentition, besides that just mentioned in case 626, were of two varieties, both characteristic and of more than common interest. The first variety, occurring in more than 5 per cent of the cases in both tribes, consists in the presence of an additional cusp on one or both the upper lateral incisors. In the Indians the upper incisors of the second dentition are ventrally deeply concave and shovel-like, differing in this respect from the form usually found in whites. With this character (thus far apparently ignored) it is occasionally found that the median point ventrally on one or both the lateral (very rarely median) incisors develops into a cusp, which when more pronounced gives the tooth nearly the appearance of a bicuspid.

The second variety of anomaly is a characteristic supernumerary dental element between or in the neighborhood of the upper median incisors. This tooth, designated "x" in the author's notes, presents in a large majority of cases a typical form (fig. 2). It has only a moderately long root and a regularly conical, more or less sharp, enamel-covered, free extremity. It erupts seemingly about or slightly after the appearance of the median incisors, and may be displaced forward, backward, or laterally. It is found in children of both tribes and both sexes, and occurs also among other Indians. In one instance (case 831) there were two of these strange teeth. There is very little, if any, chance of this anomalous tooth being confounded with a persistent first incisor.

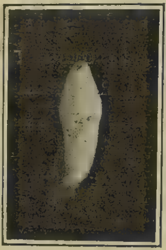


FIG. 2. A supernumerary tooth (*x*) occurring with some frequency among the Apache and the Pima.

The writer has arrived at no definite explanation respecting either the supernumerary incisor cusps or the "x" dental element. Very rarely one or the other is observed in whites. The cusps may be regarded as in line of further specialization, while the "x" tooth seems to be a reversion to an ancient (carnivora, or more remote) feature, perpetuated and perhaps to a certain extent locally multiplied through heredity.

The following list gives in detail the cases of all except the cusp anomalies. The percentage of occurrence of "x" in the two tribes examined is even somewhat larger, for undoubtedly in a number of instances not detected or otherwise learned of the displaced extra tooth had been removed before an opportunity was had to examine the child.

Dental anomalies, by individuals

464. Mescalero boy, 112.6 cm. tall (approximately 6 years old): Has in the upper jaw 6 teeth anterior to the canines, 4 being first dentition incisors and 2 supernumerary. The extra tooth on each side is small and so much like the lateral incisors, also smaller than usual, that it was impossible to say which was which.

659. San Carlos girl, 118.3 cm. tall (approximately 7 years old): The right lower lateral incisor and the neighboring canine, both of first dentition, are smaller than those of the opposite side and so close together that they appear like one tooth. All the upper front teeth are in a symmetrical arch and not crowded.

661. Mescalero girl, 119.4 cm. tall (7 to 8 years old): In the place of the right upper median incisor and in front of the canine there is a not-fully-developed (quite recently erupted) conical tooth (x); in appearance this tooth is exactly like the supernumerary elements observed in corresponding locations in other examples.

676. Mescalero girl, 126 cm. tall (approximately 9 years old): A supernumerary, somewhat conical dental element (x) erupted about two months ago, ventrad to the median incisors and near the median line.

507. San Carlos girl, 133.4 cm. tall (approximately 10 years old): A supernumerary conical tooth (x) exactly between the upper median incisors.

738. San Carlos girl, 143.7 cm. tall (approximately 12 years old): A supernumerary conical dental element (x) ventrad of the upper median incisors and near the median line.

313. Pima girl, 144.3 cm. tall (12 to 13 years old): In the place of the right upper lateral incisor is a small conical tooth (probably x).

546. San Carlos boy, 145.3 cm. tall (12 to 13 years old): A supernumerary conica tooth (x), which was found ventrad of upper median incisors and near the median line.

558. San Carlos boy, 148.5 cm. tall (approximately 13 years old): A supernumerary, somewhat conical tooth (x) in front, just above the two upper median incisors; it points forward and downward.

167. Pima boy, 148.6 cm. tall (approximately 13 years old): A typical conical supernumerary tooth (x), just ventrad to the right upper median incisor and partially displacing it.

785. San Carlos girl, 151.4 cm. tall (13 to 14 years old): A supernumerary conical tooth (x) between and slightly ventrad to the upper median incisor.

359. Pima girl, 153.8 cm. tall (approximately 14 years old): A supernumerary, somewhat conical tooth (x), which was wedged in obliquely between the upper incisors.

827. San Carlos girl, 158.3 cm. tall: A supernumerary, somewhat conical tooth (x) situated between the upper median incisors, and displacing the left one backward.

586. San Carlos boy, 158.3 cm. tall: A supernumerary tooth (not remaining from first dentition), incisor-like but somewhat smaller (x?) between the left median and the lateral upper incisors.

592. San Carlos boy, 159.1 cm. tall: A supernumerary, irregularly conical dental element (x) ventrad of the left median upper incisor.

831. San Carlos girl, 159.7 cm. tall: Two quite conical supernumerary teeth (x, x) between the upper median incisors; all incisors and canines were partially displaced.

833. Mescalero girl, 160 cm. tall: A supernumerary conical tooth (x) in the place of the left lateral upper incisor, which had been lost as the result of caries some months before.

205. Pima boy, 165.3 cm. tall: A supernumerary conical tooth (x) in place of the left median upper incisor, which had been lost as the result of caries several years before.

626. San Carlos boy, 167.6 cm. tall: A persistent first dentition incisor in place of the left lateral lower incisor.

Puberty.—Investigations on this subject were restricted to girls and of necessity were reduced to the mere facts of the state of development of the breasts and of the existence or nonexistence of menstruation.

The earliest signs of the development of the mammæ, appreciable in children when dressed, were noticed in girls of 135 cm. and above in height among the Pima, and in those of 140 cm. and above in the Apache, these statures representing approximately the age of from 11 to 12 years. From this period (see detail tables in the Appendix) the breasts grow slowly until in later adolescence they reach proportions which, in whites, would be termed moderate, and in general they remain thus throughout life. Mammæ of excessive size have not been met with among the Indians.

The data concerning the establishment of the monthly periods were furnished by the school matrons, nearly all of whom keep a written record of the menstruating girls. Where any doubts arose they were easily settled with the aid of the matrons and of some of the older pupils. In a few instances, in which the function manifested itself first during school life and during the service of the present matron, the exact date of its beginning and the circumstances attending this occasion could be learned. In most cases, however, all that could be found out was that the girl in question had been menstruating for at least so long, the term named being generally that of the personal acquaintance of the matron with the pupil. In consequence of these conditions, and of the total absence of accurate age records, comparisons with white girls, the data pertaining to whom deal with the age at which menstruation begins, can not be direct or fully satisfactory. Any greater difference that may exist should, however, be significant.

The conditions found in the two tribes are set forth in the following table:

Menstruation (established)

Stature.	Approximate corresponding age in the Indians.	San Carlos Apache.			Pima.		
		Number of girls.	Number menstruous.	Per cent.	Number of girls.	Number menstruous.	Per cent.
Up to 135 cm	Up to 11 years	57	....	....	56	....	....
135.1 to 140 cm	11 to 12 years	21	....	....	21	[a]2	9.5
140.1 to 145 cm		19	[b]2	10.5	13	6	46.2
145.1 to 150 cm	12 to 13 years	34	11	32.4	20	15	75.0
150.1 to 155 cm	13 to 14 years	37	29	78.4	27	25	92.6
155.1 to 160 cm	Above 14 years	19	19	100.0	9	9	100.0
160.1 to 166 cm		13	12	92.3	5	5	100.0

[a] Earliest at 142.2 cm.

[b] Earliest at 138.4 cm.

It is seen that the conditions are not alike among the San Carlos Apache and the Pima, a larger proportion of the Pima girls menstruating early. This indicates that on the whole the function is established earlier among the Pima, a condition which may be due to differences in climate, present and past, in the habitats of the peoples, the present and probably also the former regions inhabited by the Apache being the higher and cooler.

As to comparisons with whites, we can utilize Dr. J. R. Chadwick's data on a large series (575) of American-born white women living in Boston.[a] From these data it appears that the American girl in Boston commences to menstruate in nearly four-fifths of the cases between 13 and 17, which, according to Bowditch's measurements, correspond to heights of 149 and 157 cm., respectively. The maximum frequency of commencement of the periods, as well as the average of the setting in of the function, falls between the fourteenth and fifteenth years, this age corresponding to 155.9 cm. of average stature. In more than 40 per cent of the Boston young women menstruation had not begun until after the fifteenth year or the 155.9 cm. stature mark (average) had been passed. If attention is now directed to the table dealing with the Indians, it is seen that in the stature group of from 145.1 to 150 cm., corresponding to about the thirteenth year of life, in one-third of the Apache and in three-fourths of the Pima girls examined menstruation had already become established; in the next group, statures of from 150.1 to 155 cm., or thirteenth to fourteenth year of age, puberty was fully established in nearly four-fifths of the Apache and in more than nine-tenths of the Pima female pupils; and in subjects above 155.1 cm. in stature, or approximately 14 years of age, only a single girl out of 46 as yet did not menstruate. The figures leave no doubt as to the fact that menstruation in the Apache, and especially in the Pima, commences earlier than it does in the American-born white girls of Boston.[b] A more desirable comparison would be that of the Apache and the Pima with white girls born in Arizona, but no suitable observations on white children have been made thus far in that region. Reports on some of the southern races in the Old World, though differing with various authors, indicate an earlier average beginning of menstruation than is encountered in the temperate zone, and especially in the colder regions.[c]

Once well established, the menstruation in the Indian woman is generally regular. Neither its beginning (puberty) nor its monthly recurrence, with rare exceptions, occasions much difficulty. The periodicity and duration, as well as other characteristics, correspond closely with those commonly met with in healthy white women. The notes on the recurrence of menses which appear in the following table were taken in 1901 among the Mohave school children by the matron:

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[a] In H. P. Bowditch's The Growth of Children, *Eighth Annual Report of State Board of Health of Massachusetts*, Boston, 1877, 12. See also Charles Roberts, The Physical Maturity of Women, *The Lancet*, July 25, 1885.

[b] Among the Yuma a school girl menstruated at 6 and another at 8 years of age. A menstruating Hopi girl was seen who could not have been more than 9 or at most 10 years old.

[c] See H. Vierordt's Daten und Tabellen, 2d ed., Jena, 1893, 328–329.

Menstruation (commencing days) of Mohave girls, at Fort Mohave school, in the first half of 1901

Numbers designating pupils.	Age. Yrs.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	10	....	27	....	....	....	4
2	11	2	7	12	19	24	....
3	11	8	3–28	29	26	27	....
4	11	22	21	....	29	27	....
5	11	....	7	26	....	....	6
6	12	2	24	23	....	20	12
7	12	2	21	....	29	....	....
8	12	8	....	10–26	27	24	21
9	12	14	21	....	17	....	13
10	12	16	8	26	....	10	10
11	12	....	....	....	25	24	21
12	12	23	17	17	12	9	6
13	12	....	25	....	....	27	22
14	12	....	....	....	13	22	....
15	13	6	5	11	8	2	1
16	13	7	1–28	31	....	....	12
17	13	15	7	12	15	10	2
18	13	....	....	22	....	19	24
19	13	....	21	12	1–23	31	....
20	14	6	27	29	24	24	21
21	14	11	10	....	11	3–29	26
22	14	11	17	16	15	8	4
23	14	16	9	10	17	10	10
24	14	29	....	....	4	3–30	....
25	14	....	18	20	15	23	....
26	15	5	2	10	19	23	21
27	15	5–28	21	19	12	10–24	19
28	15	6	9	14	14	10	12
29	15	16	10	19	13–30	....	12
30	16	7	10	10	17	19	....
31	16	....	28	....	2	3	4
32	17	10	4	18	....	....	....
33	......	....	....	16	....	3	13
34	......	....	....	16	18	31	22
35	......	....	....	26	....	27	....

As to changes in the form of the body, it was observed among the noncivilized tribes that, for several years after puberty, up to the apparent age of from 15 to 17, the bodies of the girls remain lithe and of somewhat masculine form, with small legs and thighs, small pelvises and in general with but little development of adipose tissue. Above 18 years the women are generally married, and often mothers, and the feminine characters of the body approach more closely those in average white women of similar age. Among the more civilized tribes, particularly on United States Indian reservations and in schools, the girls often begin to grow stout and rather shapeless soon after puberty. The Pima offer here a good example.

Adolescence in male; beard.—The male adolescent shows generally fair development of musculature, symmetry and plasticity of form, and a state of good nutrition. Stout individuals have not been seen among the males in any tribe before fully adult age. The youth, particularly in the uncivilized tribes, develop high capacity for walking and running, as well as for other exercise; and they augment their natural endurance by training.

Beginnings of beard appear first on the upper lip, and then on the chin, during about the fifteenth to the sixteenth year; hair on the sides of the face, usually very scarce, appears much later and may remain absent.

Special examination as to the appearance of the mustache among the Pima showed (see detail tables, Appendix) down in a few individuals below the stature of 160 cm. (corresponding to about the end of the fifteenth year), and readily perceptible down to slight mustache in all above that stature.

From the first the beard is more scanty, there being less hair for a given area, especially on the sides of the face, than among the whites, and its growth is very slow. It is like the typical beard of the Malay and the Mongolian. The majority of the young men eradicate with tweezers every hair that appears on the face and, continuing to do so, appear glabrous to an advanced age or even throughout life.[a] This condition is never wholly natural. If not interfered with, the mustache attains the length of from about 1½ to 2 inches (3 to 5 cm.), and the chin whiskers 2½ to 3 inches (6 to 8 cm.). The former is usually shorter and scanty mesially, acquiring the greatest length above the corners of the mouth.

GENERAL RÉSUMÉ OF PHYSIOLOGICAL OBSERVATIONS ON THE INDIAN CHILD

In order to facilitate a review of the results of the physiological investigation on the Indian, particularly the San Carlos Apache and the Pima children of all stages of growth, a recapitulation of the main facts is here appended.

Locomotion and talking

The functions of locomotion and talking manifest themselves in the Indian child (Apache and Pima) on the average about as follows:

Sitting free, eight to nine months.
Crawling, nine months.
Standing free, fourteen months.
Walking, fifteen months.

Talking: Commencement (single words) at about 1 year; some connection, toward end of second year; talking well at 4 years; exceptions more in direction of precocity than of marked retardation.

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[a] The reason sometimes given for this is that the hair is ugly, or that it is not liked by the women because it scratches, but the men for the most part merely follow the tribal custom without knowing the cause of it. It is with them a deep-rooted fashion.

Heart action, lung action, heat production

Pulse: The average heart beat was found more frequent in the newly born and in the very young Indian children than in white infants of similar age; but after the third year it is invariably slower than in the whites.

There are some tribal differences, but they are of minor character.

Sex differences were found to be not pronounced during the earlier years of the Indian children, but after these reach the age of 5 or 6 years the pulse in the female is slightly quicker than in the male.

Respiration: Racial, tribal, and sex differences are not pronounced during the earlier years.

From the age of about 6 years and onward there are only slight differences between the respiratory rate of the Indian and that of the white child.

Between the tribes the Apache show a slightly slower respiration than the Pima, but the difference diminishes with age.

In females more than 6 years old the rate of respiration is throughout slightly in excess of that in males.

The pulse-respiration ratio increases up to about the fifth year; in older children it is throughout lower than in the whites; it is lower in the Pima than in the Apache children; and, except during the first year of life, is slightly lower in the males than in the females.

Temperature: The mouth (sub lingua) temperature of the Indian children of school age and of adolescents was found to differ but little from that in children and adolescents among the whites.[a]

There are slight tribal and sex differences; in most of the stature groups the females show a little higher average temperature than the males of corresponding divisions.

Muscular potency

Muscular force: The pressure force and, in younger subjects, also the traction appear on the average slightly inferior to those in whites.

There are some tribal differences.

Sex differences are pronounced, especially among the adolescents, the males being in all three tests the stronger.

The right hand in right-handed persons, the left hand in left-handed persons, is generally the stronger.[b]

Growth

Body, height sub- and supra-ischia: The proportion of height above the ischia to total height diminishes up to about the fourteenth year of age; in subsequent years it shows a slight augmentation.

Tribal differences are quite insignificant.

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[a] See Temperature in adults, p. 142.

[b] See Muscular force in adults, pp. 146 et seq.

In females above 130 cm. in stature the percentage of the height above ischia in total height is on the average slightly greater and that of the length of the lower limbs slightly less than the same in the males of corresponding statures.

Weight: The weight of Indian children and adolescents is in general slightly greater than that of whites of corresponding statures.

There are some tribal differences in both sexes.

The boys are the heavier for all statures up to the approach of the period of puberty, when they are overtaken by the girls.

Growth of the head and face: The growth of the head and face in all principal dimensions proceeds without any marked diminution at any period throughout childhood and adolescence, ending only at some time in the adult life.

The absolute proportions of the principal head and face diameters differ much in the tribes; they are all larger in the males than in the females.

The size of the head and also of the face, as compared with stature, diminishes with growth, as in the other races.

Cephalic index decreases slightly (the head becoming relatively longer) with growth in the males, but not in the females; facial index increases (the face becoming relatively higher) with growth in both sexes.

Teeth

First dentition: All the teeth of the first dentition appear in the same order in the Indian child as in the white.

All the incisors erupt on the average at about the same age in the two races.

The appearance of the first premolars and canines seems to be somewhat belated in the Indians.

The eruption of the posterior premolars and the completion of the first dentition are accomplished earlier in the Indians.

Second dentition: The incisors, both bicuspids, and the first molars appear at about the same age as in whites.

The canines seem to appear a little earlier in the Indians.

The second molars erupt decidedly earlier and the third possibly a little earlier in the Indians. Retardation in the eruption and the nonappearance of the last molar are less frequent in the Indians than in the whites.

There are no pronounced tribal or sex differences.

Puberty

Breasts: Development of the breasts commences in the Apache and Pima girls during the twelfth year.

There are some tribal differences.

Menstruation commences earlier in the Indian than in New England white girls, and retardation is less frequent.

Tribal differences exist.

In the males the beard begins to appear on the upper lip and soon afterward on the chin, from the fifteenth to the sixteenth year; on the sides of the face much later. It is more scanty than in the whites, especially on the sides of the face.

Children and adolescents of the other Southwestern tribes, so far as examined, correspond in all essentials, except in the absolute measurements of the body, with the Pima and Apache.

Physiological Observations on Adults

The observations that it was possible to secure on adults may be divided into those obtained by the aid of instruments and those gathered in other ways. The former, which receive precedence in the text, included many measurements that will be more properly treated of in other publications. All the data relate only to normal, full-blood individuals, others having been excluded.

STATURE

The growth of the body is a definite function of the organism and adult stature is its culmination The subject of growth will here be dealt with from this viewpoint only.

The following table gives the results of the writer's measurements of normal and healthy adults between about 20 and 60 years of age in 38 tribally or geographically distinct groups. All the heights were taken with the subjects barefooted and bareheaded, by means of a square and Broca's graduated plane, suspended 1 meter above a solid, level surface. The numbers of subjects, though too small in some instances, may be considered on the whole as fairly sufficient; and the results of measurements agree in every case with the more extensive visual observations.

Average statures

Tribe.	Males.		Females.		Difference (in centimeters).	Ratio (female stature = 100).
	Cases.	Centimeters.	Cases.	Centimeters.		
Maricopa	40	174.9	30	160.4	14.5	108.4
Yuma	37	172.2	5	161.7	10.5	106.5
Pima	53	171.8	30	157.4	14.4	109.1
Mohave (Needles and Fort Mohave)	45	171.6	25	158.5	13.1	108.3
Jicarilla Apache	40	171.35				
Navaho	50	171.3	30	157.3	14.0	108.9
White River Apache	52	171.1	30	157.2	13.9	108.8
Papago	50	170.9	30	155.9	15.0	109.6
Havasupai	10	170.6				
Yavapai Mohave (San Carlos)	40	170.4	15	159.9	10.5	106.6

Average statures—Continued

Tribe.	Males.		Females.		Difference (in centimeters).	Ratio (female stature=100).
	Cases.	Centimeters.	Cases.	Centimeters.		
San Carlos Apache	43	169.6	20	157.1	12.5	108.0
Yaqui	50	169.6	33	154.2	15.4	110.0
Walapai	35	168.6	10	159.6	9.0	105.6
Isleta Pueblos	30	168.3				
Mescalero Apache	25	167.5				
Mayo	53	167.3	30	155.2	11.1	107.8
Opata	30	167.0	20	155.0	12.0	107.7
Southern Ute	50	166.85	20	153.7	13.15	108.6
San Juan Pueblos	29	165.9				
Santo Domingo Pueblos	40	165.6				
Tepehuane (southern)	40	165.3	15	151.6	13.7	109.0
Acoma Pueblos	14	165.0				
Nahua	50	164.35				
Tarahumare	23	164.2	10	152.7	11.5	107.5
Taos Pueblos	38	164.1				
Cora	53	164.1	10	152.2	11.9	107.8
Hopi Pueblos	60	163.8	29	150.7	12.1	108.7
Laguna Pueblos	65	163.7	30	153.8	9.9	106.4
Zuñi Pueblos	60	163.5	30	150.4	13.1	108.7
Huichol	30	163.4	19	154.3	9.1	105.9
Tarasco	50	163.1	30	150.8	12.3	108.2
Otomi (Mexico)	12	162.8				
Jemez Pueblos	40	162.7				
Sia Pueblos	7	162.4				
Aztec (Tlahuiltec)	50	161.0	30	148.9	12.1	108.1
Mazahua	41	160.9				
Tepecano	25	160.2				
Otomi (Hidalgo)	50	158.5	25	147.3	11.2	107.6

The tribes have been arranged by the average stature of the men, beginning with the tallest, and this adjustment brings out remarkable features.

The tallest four tribes are those of the hottest and lowest portion of the Southwest, the valleys of the lower Gila and Colorado. Other tribes of these lowlands, the Cocopa as well as the Seri, are tall people, and, as the table shows, the Papago and Yaqui (among the latter of whom are many tall individuals) are not much shorter. The tribes do not all belong to one physical type. The Maricopa, Yuma, and Mohave, with probably the Cocopa, form one group (moderate brachycephals), while the Pima and to a certain extent also the Papago and Yaqui belong to another (moderate to pronounced dolichocephals), with Seri uncertain. A tribe with whom the Mohave claim blood relationship, the California Diegueños, also consists of rather tall people.

The next groups in point of height are the Apache, with the closely related Havasupai and Walapai. These are all highly brachycephalic people. Of these only the Havasupai and most of the San Carlos

Apache live and have lived for a considerable time in what approaches a hot climate. The present Jicarilla and Mescalero reservations are situated in comparatively cold regions; but forty years ago both these branches of the Apache lived almost free of restraint in New Mexico and probably selected warmer localities. The majority of the White Mountain Apache since known have lived in the elevated temperate-to-cold region in which they are found to-day. The country of the Walapai is warm, but not excessively so.

The remaining group of tall people is the Navaho. This tribe, notwithstanding the fact that their language is closely allied to that of the Apache, are much more directly related in blood on one side to the Pueblos and on the other possibly to the Yuma-Mohave. The Navaho occupy the more habitable parts of an extensive region of high plateaus with a climate quite moderate in summer and cold in winter. It is practically the same climate as that in which most of the Pueblos live.

The shortest four tribes are all Mexican. Of these the Tlahuiltec live in an excessively hot region, the other three in moderately hot areas. The Tepecano are brachycephalic the other three dolichocephalic. Two other short Mexican tribes, not otherwise physically related, are the Tarasco and Huichol; the former live in an elevated region with a moderate climate, the latter in warm valleys, but also in cold spots, of a high, very mountainous region.

Immediately above the shortest Mexican tribes come several of the Pueblos of the United States. The tallest of the Pueblos are the Isletas, who live but a short distance from the decidedly shorter Lagunas, but occupy the river valley. The Hopi, on the other hand, who live on high, windy, and comparatively cold, isolated mesas, are of quite the same stature as the Zuñi (to whom they are otherwise closely related physically), although the villages of the latter are farther south and in a relatively low basin with shallow neighboring valleys. None of these tribes have been affected by recent migration, though some of the accessions to the Hopi were received in the historic period.

The facts presented above point to the conclusion that blood affinity, hence heredity, is a more potent agent in determining stature than climatic influence of moderate duration and intensity. The only group of the tribes on which the action of climate seems perceptible are those on the lower Gila and Colorado. In other parts of the United States, however, equally tall statures are attained under totally different conditions. As to food, occupation, etc., it was seen in the chapters on environment and food that probably there is, or used to be, greater abundance of food, with addition of sea food, on the lower Gila, Colorado, and in the Yaqui region. As to other localities, there is nothing so characteristic in this respect with any other tribe or group of tribes as would be apt greatly to influence the growth of the people.

The difference in stature between man and woman among the whites amounts to $\frac{1}{16}$ of the male height (Gatschet), or 8–16 cm. (Vierordt), or 12 cm. (Topinard), being greater in the tall than in the short peoples (Tenon);[a] it amounts to a little more than 12 cm., on an average, among the Indians, ranging from 9 to 15.4 cm., and, with some exceptions, it is appreciably greater among the taller tribes.

The ratio of male to female height (the latter being considered 100) is an interesting but generally neglected item. It averages for the tribes studied here about 108. The difference between its minimum (105.6) and maximum (110.0) is a little more than 4½ units (6.4 cm.), but in all probability this would be reduced were a larger number of measurements of the females of some of the tribes available. Nine separate series of measurements of whites by different observers give the above sex ratio as ranging from 106.5 (Italians) to 108.3 (Russians), with the mean of approximately 107.5, which is very nearly that of the Indians.

The succeeding two tables show the amount of variation in stature within the tribes. It ranges from 20 to 30 cm. in the larger groups of men and similarly in women. Were the number of measured individuals much increased, the limits of variation would very likely rise to 35 cm., while restrictions as to age of those measured would have an opposite effect. There seems to be no exceptional range of variation in any particular group of statures studied.

Variations in stature (males) by stature groups

Absolute measurements.	Maricopa (40).	Yuma (37).	Pima (53).	Mohave—Needles and Fort Mohave (45).	Jicarilla Apache (40).	Navaho (50).	White River Apache (52).	Papago (50).	Havasupai (10).	Mohave, San Carlos (40).	San Carlos Apache (43).	Yaqui (50).	Walapai (35).
	P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ci.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
187.5 to 185.1 cm	2.5	......	......	2.2	......	......	......	......	......	......	......	......	......
185 to 180.1 cm	20.0	5.4	7.5	2.2	......	......	5.9	2.0	......	2.5	......	2.0	......
180 to 175.1 cm	30.0	27.0	26.4	17.8	32.5	22.0	25.1	30.0	10.0	12.5	9.3	20.0	17.1
175 to 170.1 cm	27.5	35.1	32.1	40.0	22.5	42.0	23.2	32.0	60.0	40.0	34.8	32.0	22.8
170 to 165.1 cm	10.0	24.3	22.6	28.9	32.5	26.0	26.9	16.0	10.0	35.0	39.6	18.0	31.5
165 to 160.1 cm	10.0	5.4	11.3	8.8	10.0	10.0	17.3	14.0	20.0	7.5	16.2	18.0	20.0
160 to 155.1 cm	......	2.7	......	......	2.5	......	1.9	6.0	......	2.5	......	10.0	8.6
155 to 150.1 cm	......	......	......	......	......	......	......	......	......	......	......	......	......
Average stature of the tribe	174.9	172.2	171.8	171.6	171.3	171.3	171.1	170.9	170.6	170.4	169.6	169.6	168.6

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[a] See especially Topinard, éléments d'anthropologie générale, 1885, 458–460.

Variations in stature (males) by stature groups

Absolute measurements.	Isleta Pueblos (30).	Mescalero Apache (25).	Mayo (53).	Opata (30).	Southern Ute (50).	San Juan Pueblos (29).	Sto. Domingo Pueblos (40).	Tepehuane, southern (40).	Acoma Pueblos (14).	Nahua (50).	Tarahumare (23).	Taos Pueblos (38).	Cora (53).
	P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
187.5 to 185.1 cm	......	......	1.9	......	......	......	......	......	......	......	......	......	......
185 to 180.1 cm	......	......	......	3.3	......	3.4	......	2.5	......	......	......	......	......
180 to 175.1 cm	3.3	8.0	7.5	6.7	8.0	6.8	......	2.5	......	2.0	......	5.3	1.9
175 to 170.1 cm	26.8	24.0	28.3	16.6	16.0	20.7	12.5	5.0	......	6.0	13.0	10.5	11.4
170 to 165.1 cm	50.0	28.0	33.9	30.0	38.0	24.2	45.0	42.5	57.2	32.0	43.4	15.8	35.9
165 to 160.1 cm	17.7	32.0	15.1	33.3	28.0	18.2	32.5	30.0	28.5	46.0	17.4	34.3	35.9
160 to 155.1 cm	3.3	8.0	9.4	10.0	6.0	17.2	10.0	17.5	14.3	14.0	17.4	34.2	13.2
155 to 150.1 cm	......	......	3.8	......	4.0	10.3	......	......	......	......	8.7	......	1.9
Average stature of the tribe	168.3	167.5	167.3	167.0	166.8	165.9	165.6	165.3	165.0	164.3	164.2	164.1	164.1

Absolute measurements.	Hopi Pueblos (60).	Laguna Pueblos (65).	Zuñi Pueblos (60).	Huichol (30).	Tarasco (50).	Otomi, Mexico (12).	Jemez Pueblos (40).	Sia Pueblos (7).	Aztec, Tlahuiltec (50).	Mazahua (41).	Tepecano (25).	Otomi, Hidalgo (50).
	P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
187.5 to 185.1 cm	......	......	......	......	......	......	......	......	......	......	......	......
185 to 180.1 cm	......	......	......	......	......	......	......	......	......	......	......	......
180 to 175.1 cm	......	......	......	......	2.0	......	......	......	......	4.9	......	......
175 to 170.1 cm	15.0	6.1	11.7	6.7	10.0	......	12.5	......	2.0	9.8	......	......
170 to 165.1 cm	23.4	40.0	33.3	33.3	20.0	33.3	22.5	14.3	18.0	26.9	12.0	8.0
165 to 160.1 cm	38.3	29.2	26.6	40.0	38.0	50.0	27.5	57.2	26.0	29.3	40.0	36.0
160 to 155.1 cm	16.7	18.4	23.3	16.7	30.0	16.6	35.0	28.6	46.0	17.1	36.0	32.0
155 to 150.1 cm	6.7	6.2	5.0	3.3	......	......	2.5	......	8.0	14.6	12.0	24.0
Average stature of the tribe	163.8	163.7	163.5	163.4	163.1	162.8	162.7	162.4	161.0	160.9	160.2	158.5

Variations in stature (females) by stature groups

Absolute measurements.	Maricopa (30).	Yuma (5).	Pima (30).	Mohave—Needles and Fort Mohave (25).	Jicarilla Apache.	Navaho (30).	White River Apache (30).	Papago (30).	Havasupai.	Mohave, San Carlos (15).	San Carlos Apache (20).	Yaqui (33).	Walapai (10).
	P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
172.5 to 170.1 cm	3.3	......	......	......	......	......	......	......	......	......	......	......	10.0
170 to 165.1 cm	10.0	20.0	3.3	20.0	......	3.3	3.3	......	......	6.7	5.0	......	......
165 to 160.1 cm	43.4	60.0	33.3	20.0	......	23.4	33.3	20.0	......	40.0	20.0	9.1	30.0
160 to 155.1 cm	33.3	20.0	26.7	28.0	......	50.0	33.3	40.0	......	46.7	40.0	33.4	60.0
155 to 150.1 cm	6.7	......	30.0	24.0	......	16.7	20.0	26.7	......	6.7	35.0	45.5	......
150 to 145.1 cm	3.3	......	6.7	8.0	......	6.7	10.0	13.3	......	......	......	12.1	......
145 to 140.1 cm	......	......	......	......	......	......	......	......	......	......	......	......	......
140 to 137.6 cm	......	......	......	......	......	......	......	......	......	......	......	......	......
Average stature.	160.4	161.7	157.4	158.5	......	157.3	157.2	155.9	......	159.9	157.1	154.2	159.6

Absolute measurements.	Isleta Pueblos.	Mescalero Apache.	Mayo (30).	Opata (20).	Southern Ute (20).	San Juan Pueblos.	Sto. Domingo Pueblos.	Tepehuane (southern) (15).	Acoma Pueblos	Nahua.	Tarahumare (10).	Taos Pueblos.	Cora (10).
	P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
172.5 to 170.1 cm	......	......	......	......	......	......	......	......	......	......	......	......	......
170 to 165.1 cm	......	......	6.7	......	......	......	......	......	......	......	......	......	......
165 to 160.1 cm	......	......	6.7	5.0	4.0	......	......	......	......	......	......	......	......
160 to 155.1 cm	......	......	40.0	55.0	28.0	......	......	13.3	......	......	20.0	......	10.0
155 to 150.1 cm	......	......	33.3	20.0	20.0	......	......	53.3	......	......	60.0	......	70.0
150 to 145.1 cm	......	......	13.3	15.0	24.0	......	......	33.4	......	......	20.0	......	20.0
145 to 140.1 cm	......	......	......	5.0	4.0	......	......	......	......	......	......	......	......
140 to 137.6 cm	......	......	......	......	......	......	......	......	......	......	......	......	......
Average stature.	......	......	155.2	155.0	153.7	......	......	151.6	......	......	152.7	......	152.2

Absolute measurements.	Hopi Pueblos (29).	Laguna Pueblos (30).	Zuñi Pueblos (30).	Huichol (19).	Tarasco (30).	Otomi (Mexico).	Jemez Pueblos.	Sia Pueblos.	Aztec, Tlahuiltec (30).	Mazahua.	Tepecano.	Otomi, Hidalgo (25).
	P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
172.5 to 170.1 cm	......	......	......	......	......	......	......	......	......	......	......	......
170 to 165.1 cm	......	3.3	......	......	3.3	......	......	......	......	......	......	......
165 to 160.1 cm	6.8	13.4	......	10.5	3.3	......	......	......	3.3	......	......	......
160 to 155.1 cm	13.8	16.7	20.0	21.1	13.4	......	......	......	3.3	......	......	......
155 to 150.1 cm	31.0	40.0	26.7	57.9	20.0	......	......	......	36.7	......	......	16.0
150 to 145.1 cm	38.0	23.3	43.3	10.6	56.6	......	......	......	36.7	......	......	56.0
145 to 140.1 cm	10.4	3.3	6.7	......	3.3	......	......	......	16.7	......	......	24.0
140 to 137.6 cm	......	......	3.3	......	......	......	......	......	3.3	......	......	4.0
Average stature.	150.7	153.8	150.4	154.3	150.8	......	......	......	148.9	......	......	147.3

PULSE, RESPIRATION, AND TEMPERATURE

The subjects of pulse, respiration, temperature, and muscular strength in adults received special attention in most of the tribes visited. The methods of examination and the instruments used were the same as in similar studies on children and were described in that connection.

Special care was taken to segregate the data for entirely healthy and normal individuals from observations on those who were not in full health or wholly normal. The chief guide in this process of separation was the condition of the tongue,[a] only those individuals being classed as healthy in whom the organ was normal. Records secured on other than fully healthy and normal persons, though not always exceptional, were kept and are given separately (see detail tables, Appendix).

The following tables give the principal data on pulse and respiration, as well as temperature, arranged on the basis of stature, the tallest heading the columns. In the more analytic tables only those tribes are included that gave the larger numbers of healthy individuals suitable for that particular comparison.

Average, minimum, and maximum pulse, respiration, and temperature in adults in good health

Tribes, arranged by stature, beginning with the tallest.	Males.						Females.					
	Number of subjects.	Pulse.	Number of subjects.	Respiration.	Number of subjects.	Temperature.	Number of subjects.	Pulse.	Number of subjects.	Respiration.	Number of subjects.	Temperature.
Maricopa:						°*F.*						°*F.*
Average	10	65	10	16	10	98.6	3	73	3	17	3	*98.5*
Minimum		56		14		97.2		72		14		98.3
Maximum		72		18		99.2		76		18		98.7
Yuma:												
Average	12	61	12	17	12	98.1	1	66	1	15	....	......
Minimum		54		14		96.3		......		......		......
Maximum		72		22		99.1		......		......		......
Pima:												
Average	24	63	23	18	24	98.5	4	67.5	4	17.5	4	*99.2*
Minimum		48		16		97.3		60		16		98.9
Maximum		78		21		99.4		72		19		99.5
Mohave:												
Average	13	61	13	18	1	98.6	3	62	3	19	1	*98.4*
Minimum		54		14		......		51		18		......
Maximum		66		22		......		70		20		......
Apache:												
Average	20	62	20	16	20	98.8	7	65	7	17	7	*98.8*
Minimum		54		14		98.4		60		15		98.6
Maximum		72		18		99.4		72		18		98.9

---

[a] The Indians, even the children, are not given to complaining. In many instances they say they feel well when there are plain signs of a different condition. This characteristic, which has often been mistaken for a lack of feeling of physical pain, is due to the naturally healthful nervous system, capable of much endurance, and to tuition. Owing to this peculiarity, mere questioning of the Indian as to his health can not be depended on.

Average, minimum, and maximum pulse, respiration, and temperature in adults in good health—Continued

Tribes, arranged by stature, beginning with the tallest.	Males.						Females.					
	Number of subjects.	Pulse.	Number of subjects.	Respiration.	Number of subjects.	Temperature.	Number of subjects.	Pulse.	Number of subjects.	Respiration.	Number of subjects.	Temperature.
Navaho:						°*F.*						°*F.*
Average	31	67	30	17	32	98.6	12	73	13	19	13	*98.9*
Minimum		52		14		97.6		62		16		97.3
Maximum		78		21		99.4		78		23		99.4
Papago:												
Average	23	61	22	18	21	98.8	9	69	8	18	9	*99.2*
Minimum		52		16		97.8		54		14		98.2
Maximum		72		21		99.8		78		20		99.9
Yaqui:												
Average	7	65	7	17	5	99.3	.....	......	.....	......	.....	......
Minimum		51		15		98.3		......		......		......
Maximum		72		20		99.9		......		......		......
Tarahumare:												
Average	9	65	18	19	18	98.2	7	73	6	18.5	7	*98.8*
Minimum		54		15		96.2		64		16		97.7
Maximum		78		22		99.2		78		20		99.4
Hopi:												
Average	34	60	32	17	34	98.6	16	67	14	19	16	*99.4*
Minimum		48		14		96.9		56		13		98.6
Maximum		74		20		99.6		78		22		99.8
Laguna Pueblos:												
Average	16	58	16	16	16	98.6	3	57	3	16	3	*98.7*
Minimum		51		12		97.1		56		15		98.6
Maximum		68		18		99.1		58		17		98.8
Zuñi:												
Average	26	57	25	17	25	98.5	3	63	3	16	3	*99.1*
Minimum		44		14		97.4		58		15		99.0
Maximum		68		19		99.3		68		17		99.2
Huichol:												
Average	16	64	16	18	17	98.1	10	68	11	19	11	*98.7*
Minimum		54		15		96.6		62		16		98.3
Maximum		74		22		98.9		76		22		99.3
Tarasco:												
Average	8	59	8	17	.....	......	3	66	3	17	.....	......
Minimum		52		13		......		60		16		......
Maximum		62		20		......		71		20		......
Otomi:												
Average	4	63	4	17	1	98.9	.....	......	.....	......	.....	......
Minimum		58		16		......		......		......		......
Maximum		70		18		......		......		......		......

Pulse, respiration, and temperature in relation to stature in adult males

Tribe.	Tallest 6 individuals.				Shortest 6 individuals.				Tallest compared with shortest individuals.		
	Average height.	Average pulse.	Average respiration.	Average temperature.	Average height.	Average pulse.	Average respiration.	Average temperature.	Pulse.	Respiration.	Temperature.
	cm.			*° F.*	*cm.*			*° F.*			*° F.*
Pima	178.4	65.0	18.0	98.4	166.1	63.0	18.0	98.2	+2	±0.0	+0.2
Apache (White River)	178.3	63.0	17.0	98.8	166.65	59.0	16.5	98.7	+4	+ .5	+ .1
Navaho	177.1	66.5	17.0	98.7	164.9	64.5	18.0	98.6	+2	−1.0	+ .1
Papago	176.3	62.0	18.0	98.7	160.4	57.0	19.0	98.9	+5	−1.0	− .2
Hopi	171.2	62.0	17.5	98.6	156.4	54.0	18.0	98.4	+8	− .5	+ .2
Zuñi	169.4	60.0	17.0	98.6	154.4	53.0	18.0	98.3	+7	−1.0	+ .3

Excess of average pulse, respiration, and temperature in females over males

Tribe.	Pulse per minute (sitting).	Respiration per minute (sitting).	Temperature sub lingua.
			° F.
Navaho	+6	+2.0	+0.3
Papago	+8	± .0	+ .4
Tarahumare	+8	− .5	+ .6
Hopi	+7	+2.0	+ .8
Huichol	+4	+1.0	+ .6

Pulse, respiration, and temperature in connection with time of day, in males

Tribe.	Earliest 6 in the day in each tribe.				Latest 6 in the day in each tribe.				Early compared with late tests.		
	Time.	Average pulse.	Average respiration.	Average temperature.	Time.	Average pulse.	Average respiration.	Average temperature.	Pulse.	Respiration.	Temperature.
Pima	8.30-9.45 A. M.	65.0	18.0	98.5	3.30–5 P. M.	63.0	18	98.2	+2	±0.0	+0.3
Apache (White River)	7.30-10 A. M.	60.5	16.0	98.7	1–5.15 P. M.	63.5	16	98.9	−3	± .0	− .2
Navaho	7-9 A. M.	68.0	16.0	98.7	3–5 P. M.	67.0	18	98.8	+1	−2.0	− .1
Hopi	8-9 A. M.	61.0	17.5	98.4	4–5.20 P. M.	54.0	18	98.6	+7	− .5	− .2
Zuñi	9-9.30 A. M.	57.0	17.0	98.5	2.30–5.15 P. M.	61.0	17	98.7	−4	± .0	− .2

Pulse, respiration, and temperature in relation to age

Tribe.	Youngest 6 adults in each tribe.				Eldest 6 adults in each tribe.				Young compared with aged.		
	Average age (approximate).	Average pulse.	Average respiration.	Average temperature.	Average age (approximate).	Average pulse.	Average respiration.	Average temperature.	Pulse.	Respiration.	Temperature.
	Years.			*° F.*	*Years.*			*° F.*			*° F.*
Pima	28	61.0	18	98.2	61	68.0	18.0	98.1	−7	±0.0	+0.1
Navaho	23	69.0	18	98.7	57	68.0	17.0	98.5	+1	+1	+ .2
Tarahumare	25	62.0	19	98.3	60	67.7	18.5	97.7	−5.7	+ .5	+ .6
Hopi	26	62.5	18	98.6	57	57.0	16.5	98.6	+5.5	+1.5	± .0
Zuñi	26	58.0	18	98.8	52	61.0	16.0	98.6	−3.0	+2.0	+ .2

Résumé of the data shown in the preceding tables, and comparison with whites.—Pulse: The average pulse rate in healthy adult whites between the ages of 15 and 50 is from "70 to 72 in the male and about 75 to 80 in the female" (Landois and Stirling, Vierordt, and other authorities). It is higher in the young and rises again somewhat in those above 50. It is slightly more rapid in those of very tall stature (Volkmann) and is more rapid in the forenoon than later in the day.

The average pulse rate in healthy adult Indians, in the sitting position, is seen from the preceding tables to range in the different tribes in men from 57 to 67 (extremes 44 to 78) and in the women from 62 to 73 (extremes 51 to 78). The heart beat is, therefore, decidedly slower in the Indian [a] than in the white man.

The differences between tribes are not marked enough to be of much significance. The lowest averages, however, were obtained in some of the shortest peoples.

In the females the pulse was found generally somewhat quicker than in the males, the average difference amounting to about 6 beats.

In the same tribes the tallest individuals show, on the average, a somewhat quicker pulse than the shortest ones. No regular peculiarity of heart action was observed at any particular time of day.

As to age, in two of five tribes the average pulse is greater in the young; in three, in the old. The two groups of the oldest individuals in the series (Pima and Tarahumare) showed the highest pulse rate.

---

[a] In 1869, in his Investigations in the Military and Anthropological Statistics of American Soldiers, Gould states the average pulse in 503 "Indians" to have been 76.31 per minute. This figure must be erroneous either through misprint (there are no details in the book) or through faulty observation. The data utilized by Gould were obtained from various sources, as recruiting posts, where accuracy and discrimination were hardly possible. No indication is given as to how many mixed-bloods or unhealthy persons were comprised in the 503 individuals, nor as to the position of the body in which the pulse was counted. The data should not be utilized as representative of the actual conditions of the pulse in the Indians.

That the relative slowness of heart action is not restricted to the Indians of the Southwest or to those who are not civilized is shown by the following records obtained during the last two years on male Indians of various delegations visiting Washington. The average pulse rate was: In 3 Creeks, 66; 2 Menominee, 67; 1 Mohican, 69; 2 Muscogee Creeks, 68; 3 Navaho, 63; 4 Osage, 61.5; 2 Pawnee, 70; 1 Pueblo (Isleta), 63; 1 Seneca, 68; 1 Ute, 64; 1 Wenatchee, 68; 1 Yakima, 64; 7 Yankton Sioux, 69.

Respiration: The number of respirations per minute in healthy whites, in a sitting position, is from 15 to 20. The averages in the Indian males as well as females ranged from 16 to 19, much as in whites; the extremes observed in males were from 12 to 22 and in the females from 13 to 23.[a]

There seemed to be no regular difference between the tallest and the shortest tribes, but in the same tribe the frequency of breathing was found to be slightly less in the tallest than in the shortest individuals.

As to the sexes, in four of the five tribes with larger groups of individuals the frequency of respiration was slightly greater in the females, and in all probability this is generally the normal condition in the Indians.

As with pulse, there were no regular variations of respiration with different times of day, but this may have been in both instances due to the fact that the extremes were not sufficient or identical.

In the young adult Indians, as contrasted with the aged, the rate of respiration is quite regularly a little higher.

On account of the slower pulse in the Indian the pulse-respiration ratio, with about equal respiration frequency, is generally lower than in whites (that is, less than 4 to 1).

Temperature: The temperature under the tongue in healthy adult whites ranges from 98.8° to 99° F. In the Indians it averages appreciably less, ranging in males from 98.1° to 98.8° F. (extremes 96.2° to 99.9° F.) and in the females from 98.5° to 99.4° F. (extremes 97.7° to 99.9° F.).

There is apparent a closer correspondence between temperature and pulse than between pulse and respiration.

No regular difference was found between the tallest and the shortest tribes; but in the same tribe the temperature of the tallest individuals averages quite generally slightly higher than that of the shortest persons.

In females it is a little higher than in the males.

In the morning the temperature (in the males) is mostly slightly lower than in the afternoon.

Finally, in the youngest adults in the tribe the temperature was found to average a little higher than in the oldest ones.

The most noteworthy results of the above tests are the generally lower pulse and temperature in the Indians as compared with whites.

---

[a] Observations secured in the National Museum on healthy male full-blood Indians visiting that institution show the following averages: 1 Creeks, 17.5; 2 Menominee, 17; 1 Mohican, 20; 2 Muscogee Creeks, 18; 3 Navaho, 18; 4 Osage, 17.5; 2 Pawnee, 20; 1 Pueblo (Isleta), 20; 1 Seneca, 15; 1 Ute, 19; 1 Yakima, 22; 7 Yankton Sioux, 20.

The simple life, prevalence of vegetable food, and less abundance in diet suggest themselves, with other agencies, as the possible causes of this. But whatever the actual causes may be, they must lie far in the past of the people, for the slowness of the pulse, at least, is so general as to constitute already a racial character, appearing early in life (see chapter on Children) and strong enough to persist under changing conditions.[a]

MUSCULAR FORCE

The tests for muscular force in adults included the maximum pressure in each hand and the greatest possible traction, all in standing position; they were secured with Mathieu's dynamometer of recent make. The instrument was of the same type and the methods were the same as those in similar tests on children (see chapter dealing with children), and no special difficulties that might mar the accuracy of the results were encountered.[b]

Numerous tests made with the same instrument and with similar precautions on adult American-born whites gave the writer records ranging, for pressure in the right hand, in males from 35 to 60, in females from 25 to 38 kg.; for pressure in the left hand, in males 30 to 50, in females 20 to 30 kg., and for traction, in males from 20 to 35, in females from 12 to 20 kg. A healthy right-handed white man, of from 25 to 40 years of age, used to some muscular work or exercise, will press with the right hand 50 to 55, with the left 40 to 45, and pull 25 to 30 kg.; a healthy right-handed white woman between similar limits of age and with a good muscular tone, can press with the right hand 30 to 35, with the left 20 to 30, and pull 15 to 20 kg. As age advances the muscular force in general becomes gradually less.

The conditions in the Indian adults of the various tribes studied are represented in the succeeding tables, in which the tribes are ranged from the tallest to the shortest (masculine stature), while the individuals are grouped by approximate ages.

The figures show that the male Indian, even at his best, does not quite equal, so far as the strength in his hands and arms is concerned, a strong white American; with the women of several of the tribes and white working women of similar ages the relation would probably be closer.

Muscular force diminishes, particularly in the males, with decrease in height in the tribes. Tall individuals in the same tribe are also the stronger, as will be seen from the next figures, though there are some exceptions to this rule.

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[a] For detail data on pulse, respiration, and temperature see Appendix.

[b] All cases that might have been affected by any injury were excluded. The lack of a larger part of any finger was seen to diminish the power of pressure in the hand having the defect.

Muscular force, in kilograms, by tribal stature and age

	20 to 30 years.			30 to 40 years.			40 to 50 years.			50 to 60 years.			Left-handed individuals.			
	Pressure.		Traction.	Pressure.		Traction.	Pressure.		Traction.	Pressure.		Traction.	Age.	Pressure.		Traction.
	Right.	Left.		Right.	Left.		Right.	Left.		Right.	Left.			Right.	Left.	
MALE.													*Yrs.*			
Maricopa:																
Number of subjects	10	10	10	15	15	15	8	8	7	7	7	7				
Average	*48.9*	*41.1*	*29.9*	*44.9*	*39.7*	*26.5*	*45.5*	*40.1*	*25.4*	*34.9*	*29.7*	*20.0*				
Minimum	36.0	27.0	22.0	32.0	28.5	16.0	40.5	34.5	16.0	26.5	22.5	15.0				
Maximum	58.5	50.0	36.0	61.0	57.0	36.5	52.5	45.0	32.0	47.5	36.0	25.5				
Yuma:																
Number of subjects	13	12	13	4	4	4	8	8	8	4	4	4				
Average	*44.7*	*40.9*	*26.0*	*47.0*	*36.6*	*25.9*	*38.8*	*31.6*	*22.6*	*41.3*	*35.8*	*27.3*				
Minimum	31.0	31.0	15.0	34.0	30.0	21.0	29.5	25.0	12.5	29.5	29.0	13.0				
Maximum	60.0	52.0	33.0	55.0	40.0	31.5	47.0	37.5	33.5	47.5	40.0	30.0				
Pima:																
Number of subjects	13	13	13	14	14	13	12	12	12	12	12	11				
Average	*41.7*	*36.5*	*24.7*	*40.7*	*35.0*	*23.7*	*36.3*	*32.6*	*21.8*	*28.7*	*24.9*	*17.0*	32	55.0	47.0	32.0
Minimum	34.0	29.0	17.0	29.5	28.5	15.0	30.0	28.0	11.5	18.0	16.0	5.5	50	29.5	30.0	17.0
Maximum	48.5	46.0	33.0	48.5	47.0	32.0	43.0	38.0	30.0	43.0	36.5	27.0	50	33.5	34.5	20.5
Mohave:																
Number of subjects	12	12	12	8	8	8	10	10	10	8	8	7				
Average	*42.5*	*37.4*	*23.5*	*45.9*	*40.9*	*27.6*	*38.2*	*33.1*	*23.7*	*28.8*	*24.8*	*16.6*	50 45	40.0 33.0	41.0 40.0	26.5 24.0
Minimum	32.5	20.5	12.0	32.0	33.0	23.0	23.0	20.0	17.0	22.0	19.5	9.0	45	30.0	38.0	17.0
Maximum	54.0	47.0	31.0	58.5	47.0	34.0	47.5	43.0	29.5	42.0	31.0	24.5	50	36.5	39.5	24.5
Apache (White Mountain):																
Number of subjects	32	32	32	6	6	6	11	11	11	1	1	1				
Average	*45.8*	*42.9*	*29.8*	*43.5*	*42.2*	*28.9*	*38.1*	*38.0*	*24.2*	*40.0*	*38.0*	*28.5*				
Minimum	35.0	32.5	23.0	35.0	35.0	25.0	24.0	28.5	17.0							
Maximum	58.5	52.0	35.0	50.0	49.0	33.0	48.0	47.0	32.0							

Papago:																
Number of subjects	28	29	29	11	11	11	8	8	8	1	1	1				
Average	*38.9*	*35.6*	*26.3*	*40.6*	*36.9*	*24.6*	*36.7*	*31.3*	*23.1*	*39.0*	*33.5*	*23.0*				
Minimum	26.5	26.0	16.5	28.0	26.5	12.5	31.0	25.0	16.0	...	...	...	48	29.5	30.5	19.5
Maximum	50.5	47.0	37.5	48.0	48.0	34.0	41.0	42.0	32.5	...	...	...				
Cora:																
Number of subjects	16	16	16	8	9	9	17	17	16	8	8	8				
Average	*35.1*	*30.9*	*21.2*	*33.6*	*29.0*	*20.1*	*31.6*	*26.4*	*18.3*	*30.4*	*23.4*	*15.3*				
Minimum	28.5	22.0	13.0	26.5	21.0	4.0	24.5	20.5	12.0	24.5	12.5	12.0	25	29.0	31.0	21.5
Maximum	41.0	38.0	32.0	41.0	38.5	27.0	36.0	32.5	25.0	35.0	28.5	23.0				
Hopi:																
Number of subjects	26	26	26	14	14	14	6	6	6	12	12	12				
Average	*42.1*	*37.7*	*27.8*	*40.2*	*35.1*	*26.3*	*35.1*	*30.9*	*22.3*	*32.4*	*27.1*	*21.0*				
Minimum	25.0	20.0	12.5	33.5	25.0	20.0	33.0	23.0	19.0	24.0	22.0	14.0				
Maximum	56.0	52.5	37.5	47.5	45.0	32.5	40.0	38.0	25.0	42.0	36.0	24.0	28	30.5	33.5	23.5
Pueblos (Laguna):													40	31.5	37.5	28.6
Number of subjects	20	21	21	17	17	17	12	12	12	9	9	9				
Average	*41.8*	*38.9*	*23.3*	*43.4*	*39.1*	*25.7*	*35.5*	*34.5*	*21.9*	*30.2*	*27.0*	*16.4*				
Minimum	26.5	26.0	15.5	36.0	29.0	20.0	29.0	26.5	17.5	18.0	15.0	13.0	40	35.0	36.5	22.0
Maximum	58.5	54.0	30.0	53.5	53.5	30.0	43.5	41.0	25.0	38.5	33.5	22.0				
Zuñi:																
Number of subjects	25	25	25	14	15	15	8	10	9	10	10	10	...	...	...	...
Average	*41.5*	*38.2*	*26.6*	*38.0*	*35.1*	*24.8*	*39.7*	*34.1*	*24.2*	*29.3*	*26.3*	*19.2*	...	...	...	...
Minimum	35.0	31.0	19.0	28.5	27.0	19.0	31.5	28.0	20.0	25.0	18.0	14.0	...	...	...	...
Maximum	51.5	46.0	36.0	50.0	43.5	37.0	51.5	46.5	30.0	41.5	36.0	23.5	...	...	...	...
Tarasco:																
Number of subjects	25	26	26	8	8	8	8	8	8	5	5	5	...	...	...	...
Average	*35.7*	*31.0*	*20.2*	*32.6*	*28.5*	*18.8*	*32.9*	*28.6*	*16.7*	*27.5*	*21.3*	*14.4*	...	...	...	...
Minimum	29.0	21.0	5.0	24.0	23.0	7.0	27.0	24.5	12.0	20.5	17.0	4.0	...	...	...	...
Maximum	44.5	43.5	33.0	40.5	35.5	32.0	34.5	32.0	23.0	38.0	29.0	22.0	...	...	...	...
Aztec:																
Number of subjects	18	20	20	17	17	16	8	8	8	3	3	3	...	...	...	...
Average	*31.2*	*27.7*	*20.7*	*26.8*	*23.9*	*14.1*	*27.6*	*23.8*	*13.8*	*24.3*	*22.8*	*10.8*	...	...	...	...
Minimum	26.0	18.5	12.0	17.0	13.5	4.5	20.5	16.5	7.5	22.5	21.0	7.5	...	...	...	...
Maximum	37.5	33.5	29.5	35.0	30.0	29.0	38.5	35.5	23.0	27.5	26.0	13.0	...	...	...	...

Muscular force, in kilograms, by tribal stature and age—Continued

	20 to 30 years.			30 to 40 years.			40 to 50 years.			50 to 60 years.			Left-handed individuals.			
	Pressure.		Traction.	Pressure.		Traction.	Pressure.		Traction.	Pressure.		Traction.	Age.	Pressure.		Traction.
	Right.	Left.		Right.	Left.		Right.	Left.		Right.	Left.			Right.	Left.	
MALE—continued.													*Yrs.*			
Otomi:																
Number of subjects	10	10	10	6	6	6	13	14	13	17	16	16				
Average	*32.7*	*29.2*	*18.5*	*34.8*	*30.4*	*21.6*	*27.7*	*25.7*	*14.8*	*26.1*	*23.7*	*11.3*	60	28.0	29.0	15.0
Minimum	26.0	24.0	11.5	30.0	24.5	14.5	19.0	17.0	7.5	16.5	15.0	5.0				
Maximum	39.0	33.0	23.0	39.0	34.0	27.0	31.5	31.0	22.0	34.5	34.0	21.0				
FEMALE.																
Maricopa:																
Number of subjects	10	10	10	12	12	12	5	5	4	3	3	3	......	......	......	......
Average	*30.0*	*27.5*	*17.2*	*26.1*	*24.0*	*14.3*	*18.6*	*16.4*	*8.6*	*20.7*	*13.8*	*9.5*	......	......	......	......
Minimum	23.5	24.5	13.5	21.0	20.0	6.0	15.0	14.0	7.5	19.0	17.0	3.5	......	......	......	......
Maximum	37.5	31.0	20.0	40.0	32.0	20.0	22.0	20.0	11.0	21.5	21.0	15.0	......	......	......	......
Yuma:																
Number of subjects	2	2	2	2	2	2	1	1	1	......	......	......	......	......	......	......
Average	*22.0*	*19.3*	*8.5*	*26.0*	*22.5*	*11.5*	*23.0*	*20.0*	*15.0*	......	......	......	......	......	......	......
Minimum	16.5	17.0	4.0	20.0	16.0	5.0	......	......	......	......	......	......	......	......	......	......
Maximum	27.5	21.5	13.0	32.0	29.0	18.0	......	......	......	......	......	......	......	......	......	......
Pima:																
Number of subjects	7	7	7	10	10	10	6	6	6	5	5	5	......	......	......	......
Average	*23.6*	*19.7*	*10.7*	*21.1*	*19.8*	*10.9*	*19.7*	*18.1*	*8.0*	*17.1*	*14.9*	*5.7*	......	......	......	......
Minimum	19.0	15.0	8.0	16.5	16.0	5.0	15.0	15.0	6.0	13.0	11.5	2.0	......	......	......	......
Maximum	29.0	24.5	14.0	25.5	23.0	21.0	26.0	21.5	10.0	20.0	17.5	11.5	......	......	......	......
Mohave:																
Number of subjects	5	5	5	10	10	10	8	8	7	1	1	1	......	......	......	......
Average	*27.8*	*26.7*	*10.1*	*25.8*	*21.3*	*14.4*	*24.9*	*22.0*	*12.8*	*19.0*	*15.0*	*10.5*	......	......	......	......
Minimum	22.0	19.0	8.0	15.0	16.0	12.0	19.5	16.5	7.5	......	......	......	......	......	......	......
Maximum	31.5	29.5	19.5	30.5	26.0	18.5	28.0	28.0	15.0	......	......	......	......	......	......	......

Apache (White Mountain):																
Number of subjects	12	12	12	8	8	8	6	6	6	4	4	4				
Average	*26.8*	*25.8*	*19.6*	*26.9*	*25.4*	*17.6*	*23.9*	*23.3*	*17.2*	*17.1*	*15.8*	*15.5*				
Minimum	18.5	21.0	15.0	17.5	18.5	10.5	20.5	21.0	13.0	14.0	12.5	12.0				
Maximum	32.0	32.0	23.0	33.5	30.0	25.0	27.0	26.0	23.0	19.5	17.5	21.0				
Papago:																
Number of subjects	11	11	11	12	12	12	3	4	3	2	2	2				
Average	*23.7*	*20.4*	*12.2*	*23.5*	*20.1*	*11.2*	*18.5*	*17.8*	*8.7*	*18.5*	*14.5*	*8.5*				
Minimum	17.5	16.0	7.0	18.0	11.5	3.5	11.0	13.0	7.0	13.0	10.0	3.0				
Maximum	28.0	22.0	16.0	30.0	26.0	24.0	23.0	22.0	12.0	24.0	19.0	14.0				
Cora:																
Number of subjects	4	4	4	3	3	3	3	3	3							
Average	*22.1*	*21.4*	*12.5*	*21.0*	*18.7*	*7.0*	*22.8*	*22.8*	*11.5*							
Minimum	19.5	17.5	8.0	19.0	15.5	4.5	18.5	15.0	7.5							
Maximum	27.0	26.5	18.0	24.5	22.5	10.5	29.0	33.0	15.5							
Hopi:																
Number of subjects	10	10	10	10	10	10	3	3	3	7	7	7				
Average	*26.7*	*22.9*	*17.2*	*24.9*	*22.8*	*16.2*	*22.2*	*19.3*	*13.8*	*22.0*	*20.5*	*14.6*				
Minimum	22.0	20.5	14.0	20.0	18.5	12.5	13.0	13.0	11.0	20.5	18.5	11.0				
Maximum	35.0	26.5	21.0	33.0	31.5	21.0	32.0	24.0	17.0	24.0	23.5	19.0				
Pueblos (Laguna):																
Number of subjects	15	15	15	6	6	6	6	6	6	2	2	2				
Average	*24.9*	*22.9*	*15.8*	*20.9*	*20.5*	*16.2*	*22.3*	*20.4*	*13.7*	*20.0*	*17.7*	*12.7*				
Minimum	19.0	16.5	13.0	17.5	16.5	14.0	20.0	17.0	12.0	17.5	16.0	12.0				
Maximum	28.5	26.5	19.0	24.0	24.5	19.5	25.0	23.5	15.5	22.5	19.5	13.5				
Zuñi:																
Number of subjects	6	6	6	7	7	7	13	13	13	3	4	4				
Average	*27.7*	*25.5*	*18.5*	*24.4*	*21.4*	*16.6*	*22.9*	*21.4*	*15.9*	*20.3*	*19.8*	*11.1*				
Minimum	24.0	18.5	15.0	19.5	17.0	13.0	20.0	19.0	12.0	17.0	18.0	10.0				
Maximum	33.5	34.5	20.0	30.0	27.5	21.0	27.5	25.0	22.0	24.5	21.5	13.5				
Tarasco:																
Number of subjects	8	8	8	10	10	10	7	7	7	5	5	5				
Average	*21.1*	*17.3*	*(5.6)*	*20.9*	*17.4*	*7.9*	*18.7*	*14.4*	*3.1*	*15.2*	*12.4*	*3.5*				
Minimum	14.5	10.5	(1.5)	14.5	11.5	2.5	13.5	9.5	2.0	11.0	7.5	1.5				
Maximum	28.0	23.0	12.0	25.0	24.5	12.5	27.0	19.5	5.5	18.5	14.5	5.5				

Muscular force, in kilograms, by tribal stature and age—Continued

	20 to 30 years.			30 to 40 years.			40 to 50 years.			50 to 60 years.			Left-handed individuals.			
	Pressure.		Traction.	Pressure.		Traction.	Pressure.		Traction.	Pressure.		Traction.	Age.	Pressure.		Traction.
	Right.	Left.		Right.	Left.		Right.	Left.		Right.	Left.			Right.	Left.	
FEMALE—continued.													*Yrs.*			
Aztec:																
Number of subjects	11	11	11	7	7	7	6	7	7	3	3	3	......	......	......	......
Average	*17.4*	*15.7*	*(4.6)*	*15.0*	*12.4*	*4.5*	*14.7*	*12.4*	*3.9*	*13.8*	*13.3*	*4.0*	......	......	......	......
Minimum	12.5	9.5	(2.0)	10.0	8.5	2.0	11.0	8.0	2.0	13.0	13.0	3.0	......	......	......	......
Maximum	23.5	18.5	13.0	19.0	16.5	11.0	18.0	15.0	6.5	15.0	13.5	5.0	......	......	......	......
Otomi:																
Number of subjects	6	6	6	4	4	4	10	10	10	1	1	1	......	......	......	......
Average	*21.4*	*18.8*	*9.8*	*17.4*	*15.4*	*7.1*	*17.7*	*15.2*	*6.1*	*16.5*	*12.5*	*3.5*	......	......	......	......
Minimum	13.0	12.5	5.0	11.0	8.0	2.0	14.0	9.5	2.5	......	......	......	......	......	......	......
Maximum	25.0	24.0	13.0	23.5	21.5	13.0	24.5	22.0	11.0	......	......	......	......	......	......	......

Additional force measurements (males only), taken in the U. S. National Museum [a]

Tribe.	20 to 30 years.				30 to 40 years.			
	Subject.	Pressure.		Traction.	Subject.	Pressure.		Traction.
		Right hand.	Left hand.			Right hand.	Left hand.	
		kg.	*kg.*	*kg.*		*kg.*	*kg.*	*kg.*
Cocopa	1	41.5	34.5	18.5				
Menominee								
Muscogee Creeks	1	57.0	49.0	31.0	1	47.0	44.5	29.0
Omaha	1	48.0	44.0	24.0				
Osage	2	46.5	40.3	22.0	3	41.2	35.3	20.7
Pueblos					3	43.3	37.0	21.7
Seneca	2	41.0	38.0	24.7				
Sioux								
Wenatchee [b]	1	46.5	51.0	25.5				
Yakima [b]								

Tribe.	40 to 50 years.				50 to 60 years.			
	Subject.	Pressure.		Traction.	Subject.	Pressure.		Traction.
		Right hand.	Left hand.			Right hand.	Left hand.	
		kg.	*kg.*	*kg.*		*kg.*	*kg.*	*kg.*
Cocopa								
Menominee	1	45.0	42.0	20.0				
Muscogee Creeks	1	42.0	35.5	21.0	2	39.5	36.0	24.5
Omaha								
Osage	2	44.0	37.5	25.7	3	43.0	37.3	24.7
Pueblos	1	38.0	32.5	22.0	2	28.5	24.5	16.3
Seneca								
Sioux					5	35.8	31.3	17.1
Wenatchee [b]								
Yakima [b]					1	39.5	41.0	22.0

[a] See also L. Manouvrier, sur les Peaux-Rouges du jardin d'acclimatation, *Bull. Soc. d'Anthropol. de Paris*, 3 sér., VIII, 1885, 313.

[b] Left-handed.

Differences in muscular force in the tallest and shortest men in certain tribes

Tribe.	Tallest 5 individuals in each tribe.						Shortest 6 individuals in each tribe.					
	Subject.	Average age.	Average height.	Average pressure.		Average traction.	Subject.	Average age.	Average height.	Average pressure.		Average traction.
				Right hand.	Left hand.					Right hand.	Left hand.	
			cm.	*kg.*	*kg.*	*kg.*			*cm.*	*kg.*	*kg.*	*kg.*
Pueblos	5	28	170.3	42.9	40.4	24.1	5	27	158.3	35.2	33.6	20.2
Apache	5	27	179.5	48.8	44.9	30.5	5	27	166.0	42.1	40.4	27.6
Papago	5	24	177.6	39.6	34.0	25.7	5	28	162.7	34.6	33.0	25.6
Tarasco	5	29	170.1	38.7	34.2	24.3	5	24	158.5	34.0	29.5	16.7
Aztec (Morelos)	5	28	166.1	32.7	31.0	23.0	5	28	156.2	29.3	25.9	20.5

Sex differences are pronounced in all the tribes and at all ages. The following table gives the differences in 12 of the tribes arranged by average stature, beginning with the tallest:

Average female force in relation to male force (male force=100)

[Adults of all ages]

Tribe.	Pressure.		Traction.	Tribe.	Pressure.		Traction.
	Right hand.	Left hand.			Right hand.	Left hand.	
	Per ct.	*Per ct.*	*Per ct.*		*Per ct.*	*Per ct.*	*Per ct.*
Maricopa	54.8	57.6	48.7	Hopi	63.9	65.4	63.4
Pima	56.6	57.7	43.1	Pueblos (Laguna)	58.3	58.4	66.9
Mohave	62.7	55.1	52.3	Zuñi	64.2	65.9	65.5
Apache (White Mountain)	56.6	56.1	62.7	Tarasco	59.4	56.2	28.8
Papago	54.2	53.0	41.8	Aztec	55.4	54.8	28.6
Cora	65.7	72.9	52.0	Otomi	60.2	56.8	40.0

The figures show no characteristic difference in the relation of force in women to that in men in tribes of widely diverging average statures.

The pressure force in the females equals, it is seen, in the right hand from 54 to 66, in the left hand from 53 to 73, per cent of that in the males in the same hands. In half of the tribes the differences in the left hand are less than those in the right, pointing to a relatively greater strength in the left hand in the women of these tribes. This point will be brought out more clearly in a subsequent paragraph.

There is a much greater difference between the two sexes in traction force than in pressure, owing to a greater variation in this respect in the women. This test gave abnormally low results in the Tarasco and the Aztec women.

It might be objected to the above table that, since in some tribes more of the older individuals were examined than in others, it includes groups of varying average age, to which fact may be due some of the variation. In consequence, a similar table was made of individuals of the same tribes, but ranging only between 20 and 30 years of age:

Average female force in relation to male force (male force=100) in subjects between 20 and 30 years of age

Tribe.	Pressure.		Traction.	Tribe.	Pressure.		Traction.
	Right hand.	Left hand.			Right hand.	Left hand.	
	Per ct.	*Per ct.*	*Per ct.*		*Per ct.*	*Per ct.*	*Per ct.*
Maricopa	61.3	66.9	57.3	Hopi	63.4	60.8	61.8
Pima	56.6	53.9	43.3	Pueblos (Laguna)	59.5	58.8	67.8
Mohave	65.4	71.4	42.9	Zuñi	66.7	66.7	69.5
Apache (White Mountain)	58.5	60.1	65.8	Tarasco	59.1	55.8	27.7
Papago	60.9	57.3	46.4	Aztec	55.8	56.7	22.2
Cora	62.9	69.2	59.0	Otomi	65.4	64.4	52.9

It will be noticed that there are only a few differences, in comparison with the data shown in the preceding table; and that in a number of the groups the female strength shows to better advantage, but in general the results are related.[a] With observations on a much larger series of individuals the irregularities throughout would undoubtedly diminish somewhat.

Muscular force also varies very noticeably with age, declining in general after 40, and occasionally even before that period (see table, pp. 144–148).

The relation of the force in the left to that in the right hand should present in most of the Indian tribes examined and particularly in the men, who do little manual labor of any kind except some farming, more natural conditions than in the whites, where the hands are subjected to many widely varying forms of exercise. The actual conditions in the Indian children and adults are as follows:

Pressure in left hand compared with that in right hand (right-hand pressure=100) in children

Stature.	San Carlos Apache.		Pima.		Males compared with females.[b]	
	Boys.	Girls.	Boys.	Girls.	Apache.	Pima.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
120 to 129.9 cm	88.0	85.6	91.8	90.8	+2.4	+1.0
130 to 139.9 cm	93.2	86.2	91.8	87.3	+7.0	+4.5
140 to 149.9 cm	87.3	89.3	87.6	86.6	−2.0	+1.0
150 to 159.9 cm	91.5	88.3	84.6	87.7	+3.2	−3.1
160 to 169.9 cm	93.1	89.6	88.8	88.1	+3.5	+0.7

Pressure in left hand compared with that in right hand (right-hand pressure=100) in adults (all ages combined)

	Males.	Females.	Males compared with females.[b]		Males.	Females.	Males compared with females.[b]
	Per cent.	*Per cent.*	*Per cent.*		*Per cent.*	*Per cent.*	*Per cent.*
Maricopa	86.6	91.3	−4.7	Hopi	87.8	89.3	−1.5
Pima	87.5	89.7	−2.7	Pueblos (Laguna)	94.1	92.7	+1.4
Mohave	87.7	84.6	+3.1	Zuñi	95.7	94.9	+0.8
Apache (White Mountain)	95.2	95.4	−0.2	Tarasco	88.6	81.1	+7.5
Papago	91.7	88.9	+2.8	Aztec	92.9	90.7	+2.2
Cora	86.4	95.5	−9.1	Otomi	90.5	89.0	+1.5

The figures indicate that differences in this respect between children and adults, and between tribe and tribe, are not great (within

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[a] See also detail cases in the Appendix.

[b] Differences in the percentage of the left-hand force compared with that in the right hand, in the two sexes. The males show in most groups a larger percentage, or less difference, in the power in the two hands than the females, the left hand in the male being in such instances stronger than in the female, both absolutely and in comparison with the right hand.

11 per cent). The relatively strongest left hand is met with among the White Mountain Apache and the Laguna Pueblos. In the children, particularly the Apache, is traceable a slight relative gain in the force of the left hand with increase in stature (i. e., in age). No characteristic difference is perceptible between the tallest and the shortest people. As to sex differences, it is seen that the left hand is relatively, as well as absolutely, stronger in the males, in both the Apache and the Pima children, in every stature group but one. Among the adults, however, in nearly half of the tribes, the left hand shows a somewhat greater relative strength in the females than in the males. The cause of this must be sought in some peculiarity of the work of the Indian woman, as the old fashioned corn grinding on the metate, in which both hands are used alike. The reader will be aided in this connection by a reference to the individual cases cited in the tables of Appendix.

SUMMARY OF THE PRINCIPAL RESULTS OF INSTRUMENTAL DETERMINATIONS ON THE ADULT

Stature: The tribal differences in the average stature of the southwestern and the north-Mexican Indians are large, amounting to 17 cm. in the men and 14.5 cm. in the women.

The range of differences within the tribes amounts in both sexes to from 20 to 30 cm.

The differences in the same tribe between the sexes range from 15.5 to 9 cm., being greater in the taller peoples.

Pulse: The pulse rate in all the tribes and both sexes is slower than in whites; it shows no distinctive differences among the tribes, but within the same tribe is slightly more rapid in the tallest individuals, in the females than in the males, and in old age.

Respiration: The rate of respiraton is very nearly as in whites; there is a slight excess in females over males, and in young over old individuals.

The pulse-respiration ratio is generally less than 4 to 1, and hence lower than in the whites.

Temperature: The sublingual temperature, but little different in the young of the two races, is slightly lower in adult Indians than in whites; it is slightly higher in the females than in the males, also in young than in old adults.

Muscular potency, so far as tested, is a little inferior to that in average, normal whites; it declines from about 40; in the right-handed it is greater in the right hand and in most of the left-handed greater in the left hand; it is greater in tall tribes and in tall individuals than in short ones; and on the average is less by more than one-third in the female than in the male.

FURTHER OBSERVATIONS

THE SKIN AND ITS APPENDAGES

The color of the skin of the adult Indian in the Southwest and northern Mexico is brown of various grades, enlivened, particularly on the cheeks in the younger individuals, by a transmitted shade of the circulating blood. It corresponds most closely, though not exactly, to colors 21, 28, and 42 of Broca's scale, with some individuals of lighter and some of deeper brown. The females on the whole are lighter. The individuals who habitually go dressed and clean are lighter than those who wear little clothing or those who are neglected. Those who live in the hottest districts have appreciably darker skin than those in colder regions.[a] Old people are usually dark skinned, owing partly to age, partly to exposure and lack of cleanliness. The boarding school children are in general perceptibly lighter than those out of school. Individuals who travel or work in the hot sun acquire a deeper shade of color on the exposed parts. Finally, there are in full-blood adults individual inborn differences in the color of the skin, ranging from more yellowish than brown to almost chocolate, the causes of which are not evident. Darker areas of pigmentation correspond in location to the same in other races (areola, armpits, etc.); their shade is usually blackish brown or blackish with a bluish tinge. The mucous membranes are red with a dark bluish tinge. The hair on all parts of the body is black, but is subject to more or less discoloration on prolonged exposure to the sun. The only irregularities of pigmentation met with in full-blood Indians were discolorations of scars, a very few instances of localized defect in color of the skin (vitiligo) or hair, and albinism (see pp. 192 et seq.). Freckles were seen in mixed-breeds only.

As to other qualities: The skin of the adult Indian is generally healthy and, before the signs of senility have advanced, supple. The corrugations on the dorsum of the hands are decidedly more pronounced in all Indians than they are in whites, and the difference is observable already in early childhood. But there are no corrugations in the Indian on the neck comparable to those frequently seen in white outdoor workmen. In the aged a great wrinkling of the skin of the face takes place (see Senility, pp. 157 et seq.). The emanations and secretions of the Indian skin do not have in any part of the body, or on the whole, any racial odor distinct from that in whites. Sweat is not profuse, except in the more corpulent and in those more used to comfortable life. Under apprehension, such as was occasionally seen in those who were measured, sweat breaks out generally in adults and also in children, over the point of the nose, occasionally also along the groove under the nasal septum and about the nasal alæ. Sweating hands are met with much more rarely than among whites.

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[a] The skin in most of the Mescaleros, for instance, who live in a comparatively cold region, is lighter in color than in other Apache, even where there is no suspicion of blood admixture. Some of those of the younger generation who wear clothing and wash themselves regularly retain hardly more of the yellowish brown than can be found in some whites along the Mediterranean.

The hair on the head attains in the Indian adult, male or female, the length of from 1 to 3 feet (30 to 90 cm.). In certain tribes, as the Navaho, fine long hair is rare; in others, for example, the Pima, it is quite common. The beard, as mentioned before (see chapter on Children), if allowed to grow, reaches the maximum length of from about 1½ to 3 inches (5 to 8 cm.) (pl. XXI). In many of the adults who go bareheaded the hair on the head becomes more or less brownish or rusty in color. This discoloration is usually somewhat irregular and most pronounced superficially. In those tribes in which only the women commonly go bareheaded the discoloration is nearly restricted to this sex.

The nails, generally strong and healthy, presented no special features. In old age the toe nails are occasionally left to grow until they look like deformed, dull claws.

SPECIAL SENSES

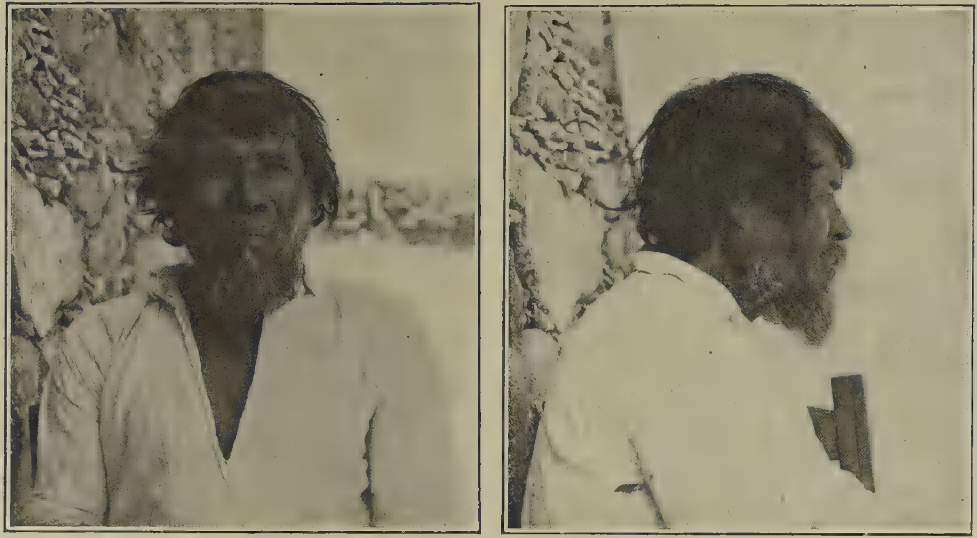
Sight, hearing, smell, and taste in the adult Indian, so far as could be ascertained by the writer's own observations, differ but little, if any, from the same functions in the whites. In the uneducated Indian with healthy eyes and ears sight and hearing are generally very good, but in no way phenomenal. Among the educated glasses are often necessary; and in some of the older persons the sense of hearing is more or less defective.

Smell, though not naturally obtuse, is in no way especially exercised, and through habit the people become rather indifferent to bad odors, appearing to lack the faculty of perceiving them.

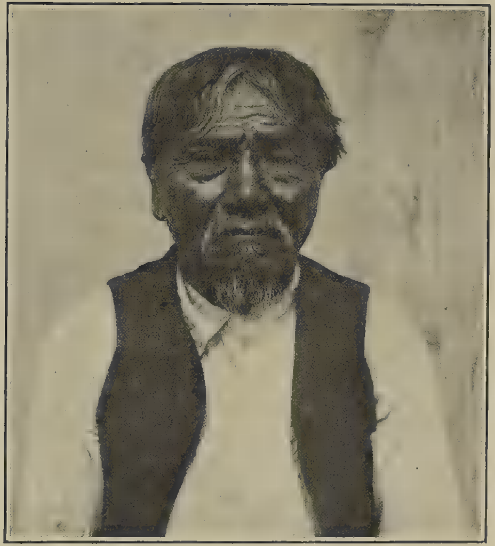
A few observations were made with an æsthesiometer on the sensibility of the skin, but owing to numerous difficulties the tests had to be abandoned. So far as they went they showed no marked difference from the condition ordinarily obtaining among laboring whites. The beard region was found to be less sensitive than the neighboring parts of the face.

SLEEP AND DREAMS

The adult Indian passes ordinarily somewhat more time in sleep than the civilized white man; but the writer is well satisfied by numerous observations that the Indian shows greater capacity than the average white man for enduring loss of sleep without ill effects. It is almost a rule in all the tribes to prolong ceremonies, dances, gambling parties, and other meetings throughout the night, and sometimes through several nights, or several nights and days. On such occasions some sleep is taken during the day, but it generally amounts to little;



TYPICAL BEARD—OTOMI



SOMEWHAT SCANTY BEARD—APACHE

CHARACTERISTIC INDIAN BEARDS

yet the usual effects are seldom observable and never complained of. As to dreams, about all that can be said on the basis of the writer's inquiry is that they are frequent and variable, and but rarely of a terrifying nature.[a]

MENTAL AND NERVOUS POWERS[b]

The mental powers of the adult Indians seen are generally good, but in no way extraordinary. Both men and women have very good memories, but they are not equally well developed in all directions, and even where developed they often depend on a definite sequence in what is remembered. Their powers of perception are good, but their reasoning is rather slow; they show good powers of imitation and adaptability;[c] their mental endurance appears remarkable in ceremonies and on other special occasions, but ordinarily they tire after an hour or even less of such moderate, though unusual, brain exertion as they undergo while being questioned. Very dull, as well as especially gifted, individuals occur but rarely. Differences among individuals, between the sexes, and even among tribes are noticeable, but their range is somewhat less than among whites.

Nor is the nervous control of the Indian extraordinary. Often, at the beginning of the measuring of a subject, a perspiration broke out on him and the pulse became temporarily irregular. All the normal reflexes of the whites exist also and in about the same force in the Indian.

Both the mental and nervous powers of the Indian could best be expressed in general by the term "healthy," the former being in many directions in a more or less undeveloped condition.

VARIA

The manifestations of yawning, snoring,[d] eructation, and flatus are all about as common in the Indian as in the white man. Sneezing,[e] however, is very rare and hiccough even more so.

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[a] Dreams are believed to be, in a way, realities. In the dream the soul leaves the body, travels, and has various experiences. According to an account given the writer by a Mohave, which agrees with the views common in most, if not all, of the Southwestern tribes, "the soul (in the dream) sees the old people, and sees or does many different things." "It is possible that the soul after thus leaving the body, likes it much more where it has gone and stays there. In this case the body soon dies without any doctor being able to help it." Dream revelations, especially those of certain persons, or if repeated, are believed in, being looked upon as the experiences, desires, or dictates of the soul, or the wishes or message of some spirit, and have a considerable effect on the Indian's thought and action. The people fear to have bad dreams, especially those of the dead.

[b] See also chapter dealing with general habits and character, and the general remarks on children.

[c] A remarkable example of individual adaptability, as well as aptness, can be seen in one of the Apache at San Carlos. For many years the man has been wholly blind (from ophthalmia), but he walks about alone, rides a horse, and even a broncho, has built himself an adobe house, and shoes his horse alone. The man is less than 40 years of age, and for his intelligence was chosen as one of the judges of the tribe.

[d] Moderate snoring is quite frequent and occurs even in the young. At San Carlos the writer saw a baby a few months old which was an habitual snorer; the cause of this could not be determined.

[e] When an Apache sneezes, "some one calls his name." Noisy eructation is indulged in, often without any restraint.

DIGESTION

A moderate degree of hunger is often and easily endured among the Indian adults. A loss of a meal or two is very frequent, particularly among the noncivilized, and is thought nothing of. On the other hand, as mentioned before (see Food, pp. 21–22), the Indian's capacity for food is quite large, and during feasts he may eat to a degree that among the whites would be considered excessive. The choice and preparation of food are in the majority of cases quite inferior. All this, which, with the general liking for fat, would severely tax ordinary powers of digestion, is supported with comparatively little difficulty by the full-grown Indian. Disturbances of the stomach or the intestinal tract are common enough, but they are generally of a light character, yielding readily to simple means of relief. Even in the children the digestive powers are strong, but excesses and improper diet have more effect than with the adults. (See Diseases, pp. 175 et seq.)

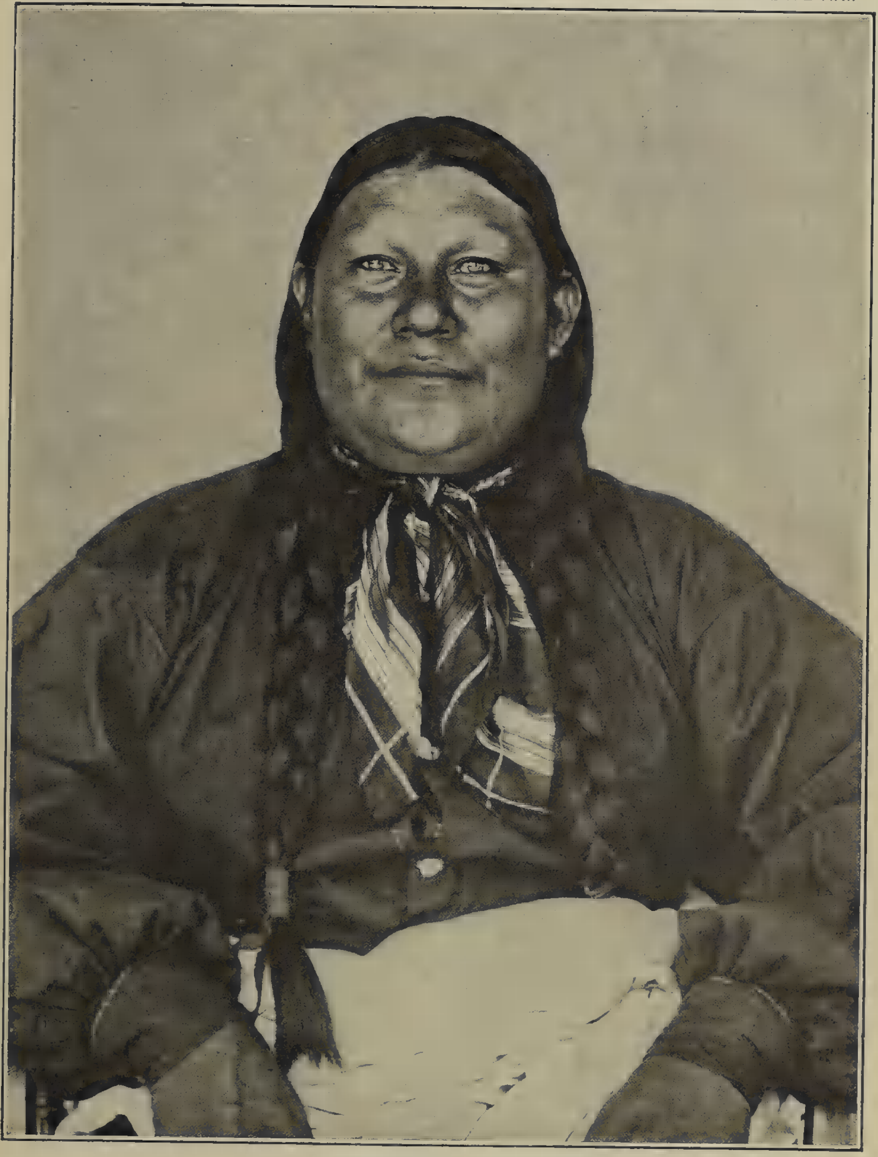
OBESITY

Especially well-nourished individuals, females and also males, occur in every tribe and at all ages, but real obesity is found almost exclusively among the Indians on reservations, who have recently changed their mode of life, becoming more sedentary in habits, with less of outdoor exercise, and among adults of less than 60 years of age. There are differences in the proportion of fat individuals even among the tribes on reservations, and there are also differences in the relative frequency of the abnormal condition in the two sexes. Monstrous or truly pathological obesity has not been encountered. The weight of the stoutest individuals seen would not exceed 300 pounds (140 kg.).

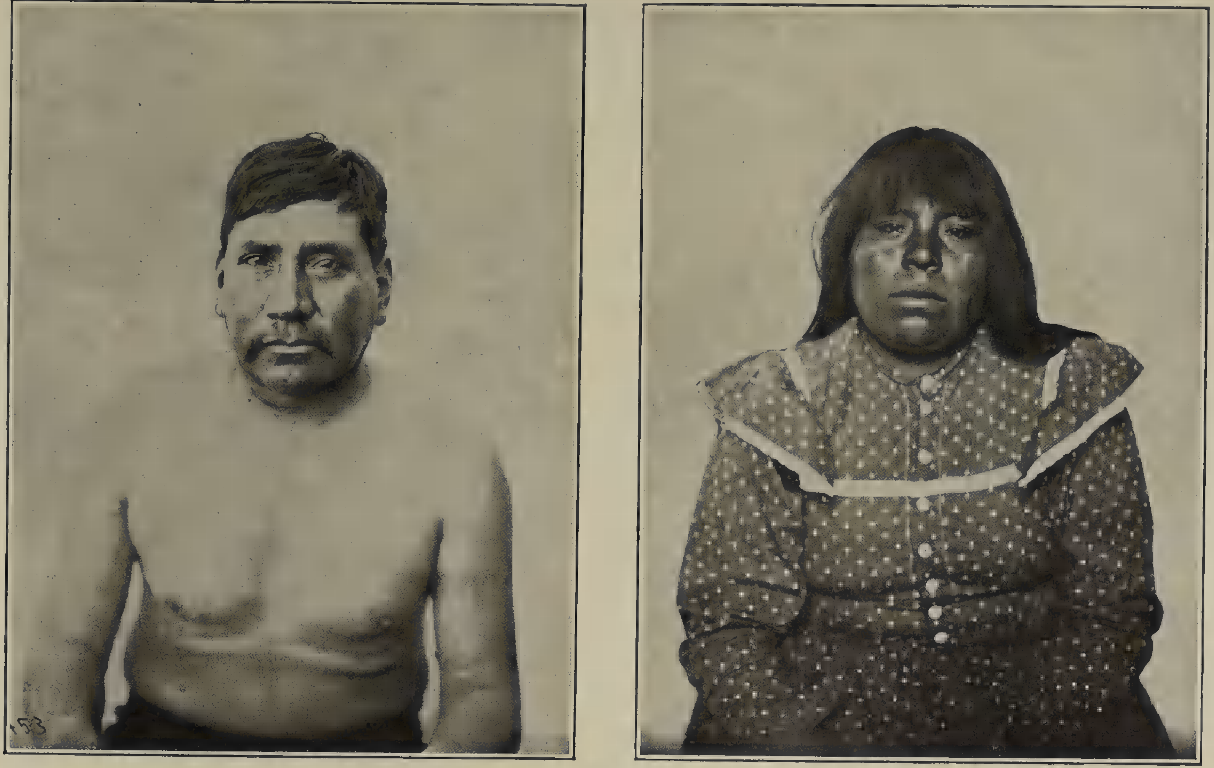
The tribes in which most stout persons were seen are the Pima, Southern Ute, Papago (San Xavier), and Maricopa. The condition is quite rare among the Pueblos, who have been of sedentary habits since ancient times. The Navaho and the Yuma men are notably lank.

Among the Pima it is largely, but not exclusively, the women who grow very stout, and similarly among the Maricopa. Among the Papago moderate obesity was noticed in some men as well as women. Among the Southern Ute the condition predominates to a marked degree in the men. (See pls. XXII, XXIII.)

The rôle played by food in the production of obesity among the Indians is apparently indirect. The Pima, Maricopa, and the San Xavier Papago had usually a sufficiency, if not plenty, of food, but the Southern Ute since known have been most irregularly nourished, even now frequently suffering from want. But the men in this tribe used to be hunters. This mode of life they had to abandon on the reservation, and it is probably the change from their past active



AN OBESE SOUTHERN UTE



PAPAGO MAN

PIMA WOMAN

TWO STOUT INDIANS

outdoor life to the present state of not a little indolence which is the prime cause of their obesity.

Among the Mexican Indians throughout the region covered higher grades of stoutness have not been encountered.

MENSTRUATION (IN ADULTS) AND CLIMACTERIUM

The menses in Indian women differ in principal characteristics and duration but little, if at all, from those in healthy whites (see also under Observations on children). Scanty or very profuse or habitually painful menstruation is heard of much less often among the Indian than among the American white women. At San Carlos the writer met a healthy Apache multipara who menstruated regularly and quite profusely eight to ten days every month, but there were generally no severe pains or any serious after effects.

The menstruating woman is generally to some extent tabued, and for this reason mainly remains about the house; but she observes no special precautions.[a] There are no clear notions as to the nature and cause of the flow.[b]

Recurrence of menstruation after the birth of a child, which shows much irregularity, was touched upon in the chapter dealing with labor, where detail cases are given.

As to menopause, the almost general lack of accurate knowledge of age prevents any extensive inquiry with profit. From what could be observed and otherwise learned on the subject, nothing appeared that would indicate important differences between Indian and white women; complications of the period and pathological sequelæ attributed to it are very rare in the Indian.

In men the sexual and even the procreative powers are occasionally seen to be preserved at the apparent age of from 60 to 70.

SENILITY

The signs of age are believed by some to be manifested earlier in the Indians, particularly in the women, than among the whites. According to the writer's observations, and comparing the Indians with whites living approximately alike, this idea is not correct. Among the Indians, both sexes show more often than among the whites, especially those of the cities, whom we are most accustomed to see, effects of rough outdoor life, and these are often accentuated by neglect of personal attire and cleanliness, but an actual earlier physiological senility does not exist. This sets in very gradually, in a similar way and at about the same period of life as with average normal whites; and it follows a more natural course, the many debilities of age seen among the whites being certainly less frequent among the Indians.

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[a] It is believed that if such a woman crossed a field its products would suffer thereby, etc. The catamenial discharges are received into a fold of old cloth or into the infolded skirt (frequent among the San Carlos Apache). Some of the Hopi women, according to the local physician, introduced during the flow a piece of old calico into the vagina. The soiled articles are never washed or used again for any purpose. Among the Apache they are bundled up and put into or under bushes. Hygienic motives play little part in all these observances.

[b] One belief is that the new moon is in some way influential; "that it makes the woman new."

Advanced senility is seldom seen in individuals under about 70. It is characterized by some bending and emaciation of the body, iron-gray or yellowish-gray hair, and especially very numerous wrinkles on the neck and face. (Pls. XXIV, XXV.) There is wrinkling at the instep and particularly just below and above the knees, also about the wrists, the elbows, and in front below the neck. Muscular strength is diminished, but many old individuals preserve not only a healthy appearance, but also capacity for walking considerable distances, carrying quite heavy burdens, long rides on horseback, and severe exertions at their ceremonies. A few individuals met with among the tribes visited had reached the age of at least 90 years, yet not one of these was either much demented or helpless; most of them, though poor in dress and other possessions, and occasionally neglected, at least partially provided for themselves or gained their subsistence, while all who were with their families helped the younger generation.[a] The teeth, which in general are less subject to caries than among white Americans, become much worn down, and some are lost by becoming loose, while the gums and alveoli diminish through atrophy. Owing to the diminution of the alveoli and the adipose tissue, the chin looks more prominent, prognathism disappears, and the face is shorter. A peculiar feature is a decided increase in the nasal index, the nose apparently becoming both shorter and broader. The malar bones, the fat under which has largely disappeared, are markedly more prominent than at any other period of life. The eyelids lose their lashes and generally become narrowed, adhesions taking place at the canthi, particularly the external, through a low-grade chronic inflammation. The sclera becomes markedly dirty yellowish in color, with reddish capillary streaks. The arcus senilis is well marked. The hair not only changes color,[b] but also becomes thinner and baldness, though much more rare and less extensive than in white Americans, may be seen in some over the front or on the top. The breasts in women atrophy considerably and hang down like loose bags. The legs and thighs get smaller in both sexes, the latter so that

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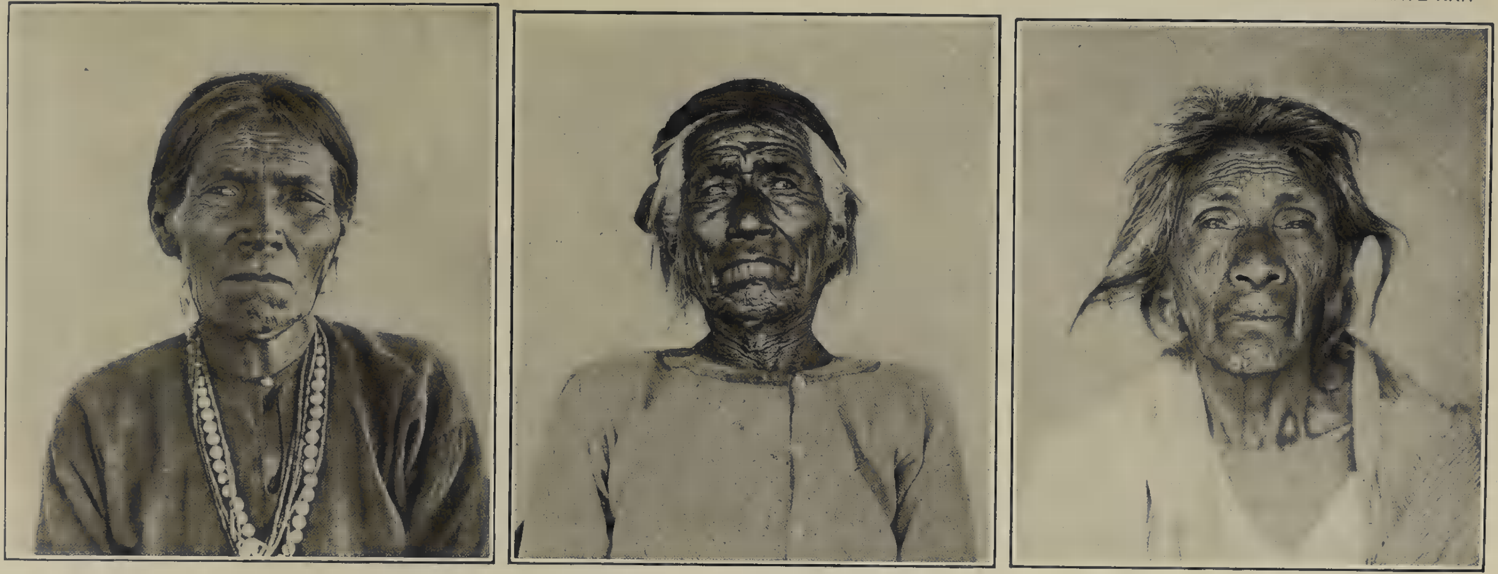
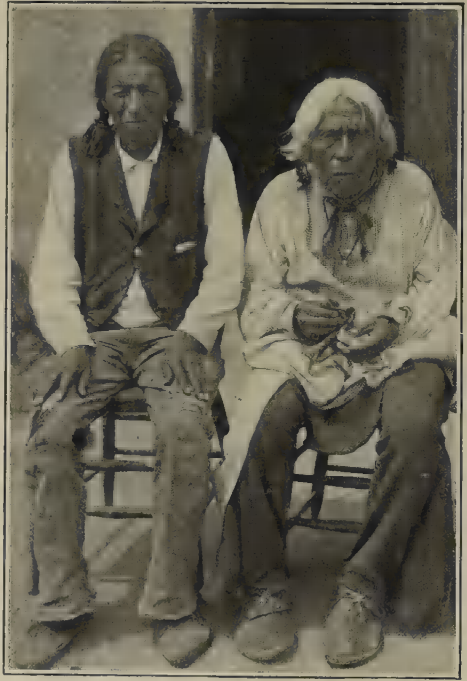
[a] At San Carlos many of the old people come regularly every ration day distances ranging from 1 to 15 miles, and carry away on their backs their apportionment, weighing from 20 to 40 pounds. At home even the blind work at whatever they can. They help in cooking and with children. At Talklai an Apache woman, old and completely blind, was found by the writer making a basket with cat's claw decoration (specimen, with another made by her, now in the U. S. National Museum). A striking feature at San Carlos is the fact that many of the old women of the tribe are unusually short, measuring less than 5 feet. This was not noticed elsewhere. The whole form in such women is small. The women of the present generation show in general stronger frames and higher statures. Probably the precarious life of the old Apache, with more scanty food and other privations, explains the change.

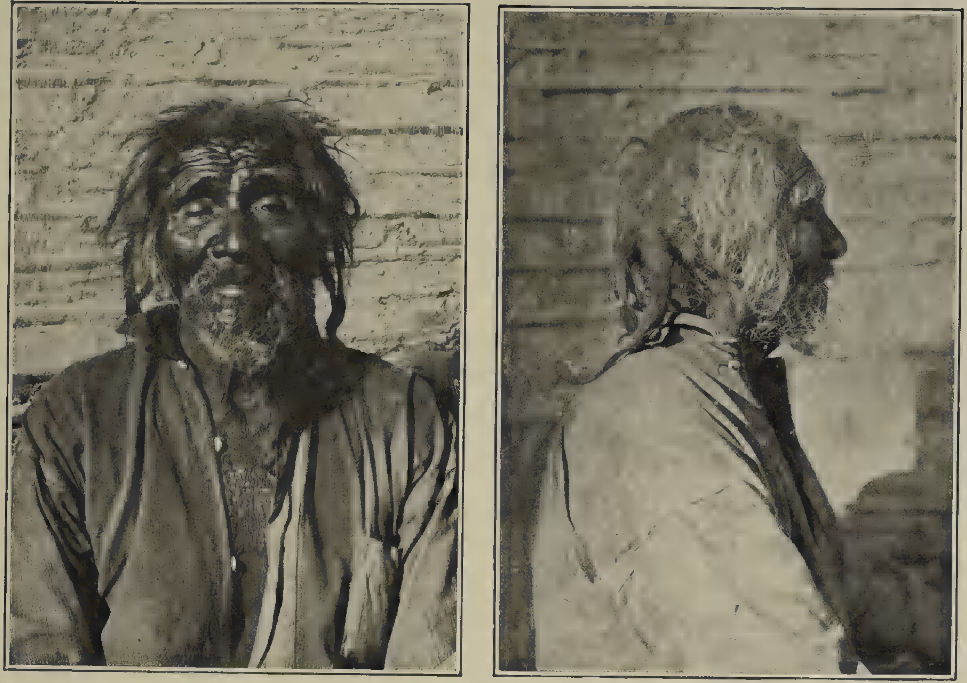
[b] Snow-white hair or beard was not seen in any instance.



NAVAHO, SHOWING WRINKLING



THE OLDEST MAN (ON THE RIGHT) AT THE SAN JUAN PUEBLO



THE OLDEST YUMA (1902)

AGED INDIANS

they no longer touch in their upper fourth in the median line, but leave a marked subpelvic space. No decisive evidence was obtained as to hardening of the arteries; it is certainly not common.

With a still further advance in age the sight and hearing get weaker, the speech (mainly perhaps through the loss of teeth) becomes less intelligible, and the mind enfeebled, while the skull shows signs of absorption;[a] these signs are precursors of the nearing end.

Several of the phases of senility were studied in detail, as muscular force, appearance of grayness, and baldness. The lack of proper age records was again felt severely and can be replaced only by approximations.

The data on muscular force were considered with that subject in adults. It was there seen that a decline in force takes place in numerous individuals even before 40, and is general and progressive after that age. The same conditions obtain among whites.

Grayness.—Special attention was paid to this subject in fourteen of the tribes. A few gray hairs may now and then be seen on the Indians even in advancing childhood, but these are due to abnormal conditions affecting the individual follicles. Exceptionally the beginning of real, progressive grayness will be met with in young adults. In general, however, the decoloration is slower and of a less degree than in whites. There are many old individuals in whom the hair still retains in part the original color. In some of the old Indians the hair is decolored irregularly, being gray and yellowish. The following data show the results of a direct examination in this line:[b]

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[a] The signs of senility in the Indian skeleton are as follows: The skull shows a worn condition and often extrusion (due to alveolar atrophy) of the remaining teeth, and absorption due to disappearance of both alveolar processes; rarely there is a characteristic bilateral antero-posterior depression over the parietal bone at some distance from the median line, due to absorption of the diploë; and there is synostosis of sutures. In the rest of the skeleton may be seen a general lightening of the bones, with thinning of the compact tissue; ossification of costal cartilages and ensiform appendix; marginal exostoses on long bones and especially on the vertebræ, and occasionally a fusion of vertebræ or pelvic bones through the marginal exostoses.

[b] Detail data in the Appendix.

Grayness

Approximate age.	Number of subjects of that age examined.		No gray hairs.		Few gray hairs.		Advancing grayness.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
20 to 30 years:								
Apache	32	12	32	12	....	....	....	....
Pueblos	46	21	46	21	....	....	....	....
Papago	29	11	22	11	7	....	....	....
Pima	13	7	12	7	1	....	....	....
Maricopa	10	10	10	9	....	1	....	....
Mohave	13	5	13	5	....	....	....	....
Yuma	13	2	13	2	....	....	....	....
Yaqui	18	....	17	....	1	....	....	....
Tarahumare	9	7	9	7	....	....	....	....
Cora	17	4	16	3	1	1	....	....
Tarasco	26	8	25	8	1	....	....	....
Otomi	10	7	9	7	1	....	....	....
Aztec (Tlahuiltec)	23	11	22	11	1	....	....	....
Total	259	105	246	103	13	2	....	....
Per cent	....	....	95	98	5	2	....	....
30 to 40 years:								
Apache	3	8	3	8	....	....	....	....
Pueblos	33	13	32	12	1	1	....	....
Papago	11	12	7	9	3	2	1	1
Pima	14	11	7	5	5	5	2	1
Maricopa	15	12	8	8	5	2	2	2
Mohave	9	10	5	6	2	4	2	....
Yuma	4	2	3	1	1	....	....	1
Yaqui	1	....	1	....	....	....	....	....
Tarahumare	4	1	4	1	....	....	....	....
Cora	9	3	9	3	....	....	....	....
Tarasco	10	10	7	6	2	4	1	....
Otomi	6	5	5	1	1	3	....	1
Aztec (Tlahuiltec)	19	8	11	8	7	....	1	....
Total	138	95	102	68	27	21	9	6
Per cent	....	....	73.9	71.6	19.6	22.1	6.5	6.3
40 to 50 years:								
Apache	11	6	9	1	2	3	....	2
Pueblos	22	20	12	6	8	11	2	3
Papago	9	4	....	1	4	2	5	1
Pima	14	7	3	1	5	....	6	6
Maricopa	8	6	....	....	5	....	3	4
Mohave	14	10	1	2	3	1	10	7
Yuma	8	1	2	....	2	....	4	1
Yaqui	....	....	....	....	....	....	....	....
Tarahumare	1	....	....	....	....	....	1	....
Cora	17	3	10	2	3	....	4	1
Tarasco	8	7	2	3	2	2	4	2
Otomi	15	11	6	2	7	4	2	5
Aztec (Tlahuiltec)	8	8	5	1	3	2	....	5
Total	135	81	50	19	44	25	41	37
Per cent	....	....	37	23.4	32.6	30.8	30.4	45.8

Grayness—Continued

Approximate age.	Number of subjects of that age examined.		No gray hairs.		Few gray hairs.		Advancing grayness.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
50 to 60 years:								
Apache	1	4	....	....	1	1	....	3
Pueblos	19	6	1	....	5	2	13	4
Papago	1	3	....	....	....	....	1	3
Pima	12	5	....	....	....	....	12	5
Maricopa	7	3	....	....	....	....	7	3
Mohave	9	1	....	....	....	....	9	1
Yuma	4	....	....	....	....	....	4	....
Yaqui	....	....	....	....	....	....	....	....
Tarahumare	9	2	....	....	2	....	7	2
Cora	8	....	....	....	1	....	7	....
Tarasco	6	5	....	....	2	....	4	5
Otomi	19	2	....	....	3	....	16	2
Aztec (Tlahuiltec)	4	3	....	....	....	....	4	3
Total	99	34	1	....	14	3	84	31
Per cent	....	....	1	....	14.1	8.8	84.9	91.2

SUMMARY

Grayness

Approximate age.	Number of subjects of that age examined.		No gray hairs.		Few gray hairs.		Advancing grayness.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
			Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
20 to 30 years	259	105	95	98	5	2	....	....
30 to 40 years	138	95	74	72	20	22	6.5	6
40 to 50 years	135	81	37	23	33	31	30	46
50 to 60 years	99	34	1	....	14	9	85	91

It is seen from the above table that before the age of 30 (approximately) the percentage of individuals beginning to be gray [a] is very small, and that between the ages of 30 and 40, three-fourths, and between 40 and 50, more than one-third of the men and one-fourth of the women have no gray hair at all, or only so very little that they need not be considered.

The differences between the tribes are not great enough to have particular significance. In individuals above 30 grayness seems to prevail slightly more in the females than in the males.

Loss of hair.—Baldness, though not invariably a sign of aging, may best be treated in this connection. It is, in any form, very uncommon in Indians, particularly in adults below 50 and in the females. Even when present the condition is rarely pronounced. A special inquiry on this point resulted as follows:

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[a] The term "few" was used, in want of a better one, for all cases where stray gray hairs could be seen without a special search.

Baldness

Tribe.	Males.		Females.	
	No. subjects examined.	Remarks.	No. subjects examined	Remarks.
Apache	52	No. 41, moderate, frontal	30	
Pueblos	60	No. 25, some baldness, vertex; No. 40, some frontal baldness; No. 88, considerable frontal baldness.	30	
Hopi	60	No. 20, moderate anterior baldness; No. 32, bald, anteriorly; No. 46, some anterior baldness.	30	
Zuñi	60		30	
Papago	50	No. 9, slight baldness on top; No. 18, some thinness on top.	30	No. 58, slight baldness on top.
Pima	53	No. 11, some loss in front; No. 38, somewhat scarce all over; No. 49, some calvitia on top.	30	
Maricopa	40	No. 2, considerable superior baldness; No. 6, some scarcity over vertex; No. 16, some scarcity over frontal region.	30	
Mohave	45	No. 38, moderate, frontal	26	
Yuma	29		5	
Yaqui	19		12	
Tarahumare	23	No. 8, some baldness over frontal	10	
Huichol	23		19	
Cora	50	No. 12, thinness, general; No. 20, some thinness, general; No. 25, some thinness, general; No. 27, some thinness, general; No. 34, thinness, general; No. 35, quite thin, especially over frontal; No. 39, thinness, general; No. 44, thinness, general; No. 45, slight thinness, general.	10	
Tarasco	50	No. 4, many lost (not through pressure); No. 23, some lost over frontal and top.	30	
Otomi [a]	50	No. 5, a considerable number lost, front and vertex; No. 17, many lost; No. 28, many lost over frontal.	25	
Aztec	54	No. 2, many lost over frontal bone; No. 49, many lost over frontal bone.	30	

[a] Many men of this tribe show a thinning of hair over the frontal bone at the spot where passes the strap which holds the burdens they carry. Such baldness, being of mechanical origin, was not included in the above data.

The above table shows that out of 718 physically well-preserved males below 65 years of age, 33, or 4.6 per cent, showed some degree of baldness; among 377 females there was but one who was slightly bald (2.6 per thousand).

As to location, in 13, or 38 per cent, of the total cases the calvitia was frontal; in 12, or 35 per cent, it was on the vertex; in 2, or 0.6 per cent, it extended over both front and vertex, while in 7, or 2 per cent, there was general thinness.

The largest proportion of cases was found among the male Cora, and in all these the baldness (thinness) was general. These people do not carry burdens on the head or back. What influence syphilis or other diseases may have had, particularly in this tribe, could not be determined.

X. NOTES ON SOCIAL ABNORMALITIES

The foregoing chapter concludes the necessarily deficient physiological observations, and the writer will now approach the pathology of the tribes. In this connection it is necessary to touch on, first of all, the unpleasant subject of social abnormalities, which often have a direct connection with disease, injury, or even death.

Artificial Abortion

Desire for and love of children are universal among the Indians. Nevertheless artificial abortion is practised among all the tribes visited, and is told of by the older men or women without much hesitation. The causes of the practice are shame or fear in the unmarried, and among married women inability through poverty to provide for the family, or a loss of many previous children, or a desire to be rid of concomitant physical difficulties and necessary subsequent cares. The occurrence is more frequent in the unmarried, notwithstanding the fact that among most of the tribes early illicit sexual intercourse is not very uncommon and the additional fact that the bearing of children by unmarried women brings no particular discredit and is but a slight obstacle to future marriage.

Nothing definite was learned as to the period of gestation at which abortion is preferably induced; but it seems probable that no efforts are made before the fetus has betrayed viability. The means employed are mainly some form of direct physical violence applied to the abdomen; occasionally one hears of an ingestion of some "medicine." In most instances it appears that the prospective mother is aided in the execution of her design by another woman, by a medicine-man, or by the husband. There was found nowhere much fear of serious bodily consequences, which suggests that these may be more limited than under similar circumstances among white women.

DETAILS

Among the San Carlos Apache the means for induction of abortion are mainly mechanical (e. g., pressure, as over an edge of a box or a rock). Some of the old people are said to know a strong medicine which produces the desired result. The attempt is always made in secrecy.

Among the White Mountain Apache abortion is usually produced by leaning on a rock or a stout stick, or by manual pressure applied to the fundus of the uterus.

Among the Mescaleros, according to information given to the writer by Dr. W. McM. Luttrell (in 1900 the agent of the tribe); as well as by others, abortion was not very rare. For this purpose the women swallowed certain vegetal substances, particularly large doses of the fermented acid juice of the inner bark of the pine; or they tried to destroy the fetus by violent pressure upon the abdomen. In a few instances a stick or a bent wire was said to have been used, being introduced by another woman into the uterus; this practice was not heard of elsewhere, and it is possible that it did not originate with the Indians.

Among the Jicarillas, according to Mr. Johnson, the agent, and Doctor Murphy, the physician of the tribe, abortion is but seldom practised, and only in the case of unmarried women. For this purpose certain herbs and plants found in that part of the country are used; what they are is a secret with the old women of the tribe. It is very probable that the herbs are aided by physical means.

Among the Navaho, Hopi, and other tribes manual or bandage (sash) pressure is applied to the woman's abdomen with the object of crushing or expelling the fetus. The Zuñi woman drinks some decoctions, but if these fail, has recourse to pressure.[a]

Among the Pima, as with some other tribes, there are remarkably few half-breeds. It is said that this is partly due to the fact that in most cases where a woman becomes pregnant by a white man an abortion is induced. One well-known attempt of this nature occurred very recently (see under Infanticide, p. 166). Mr. Alexander, the agent, was told by the Indians of another case where abortion was induced by burying the woman up to her waist in the earth.

In an eighteenth century Pima confessionary are the following suggestive questions: "Have you drank, from a desire to kill the child within you, *sanari* or anything else?" "Or have you placed (with the same object in view) a very hot stone upon your abdomen?" "Or have you lain for a length of time upon your front?" "Or have you lain a long time in the sun?" "Have you abstained for a long time from eating, wishing that the baby in you dies of hunger?" "Have you aided another woman to kill her unborn infant?"

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[a] A restraining influence in this tribe is the belief that the woman who induces abortion is likely to lose the capacity of having more children. According to information given to the writer by Dr. E. J. Davis, the agency physician, so great is this fear that as soon as a mother becomes aware that her daughter is pregnant with an illegitimate child she at once assures her that all will be well and that she must not interfere with it. When the old women learn of a recent case of abortion on the part of a young woman, they place her at once in warm sand for ten days to prevent her "drying up."

A method favored in this tribe [Zuñi] is for the woman to grasp her gravid uterus through the abdominal wall and twist and squeeze it until she succeeds in detaching the fetal connections.

Among the Mexican Indians the writer heard more about "medicines" and less about violence as a means of inducing abortion; but among most of the Mexican tribes observed, on account of their contact with whites and their adoption of Christianity, investigation of subjects of this nature is usually unsatisfactory.

Among the Opata, according to Doctor Alderman, abortion is sometimes attempted, principally from two causes—first, the rapidly increasing family without corresponding means of support, and second, the shame that comes to the unmarried women from having children. The old women give various roots and herbs which they claim are infallible. One is a tea made of rosemary and the "ocean artemisia." They administer these, then place the woman on her back and knead her abdomen until pains are brought on. Then they place her on her knees, take a position before her, and holding her by the hips, shake her back and forth with all their force, as in normal labor. If this is not successful the first time the whole process is repeated.

Artificial Sterility

There is a very general belief among the Indians visited that sterility may be artificially induced. To produce this result the women desiring to have no more children take internally certain harmless substances (see chapter dealing with medicine), which to the Indian are representative of sterility. The San Carlos Apache believe that artificial sterility can be induced, but the means is not generally known. It is supposed to be some variety of root. One of the women applied to the writer for a "medicine to make her have no more children." When questioned as to the propriety of such a proceeding, the answer was that when one child after another is born and dies, or when a number of children, one after another, are born dead, something should be done to end this unfortunate state of affairs.

Among the White Mountain Apache a woman desiring to have no children, or to stop bearing, swallows now and then a little of the red burned earth from beneath the fire. This means, which is much believed in, is used mostly by the dissolute unmarried, but also by sickly or very poor married women. Some of the Huichol women drink a decoction of a certain plant to prevent childbearing. Cora women, for the same purpose, take internally the scrapings of the male deer horn.

Infanticide

Among the Apache, Pima, Mohave, Navaho, Zuñi, and Tepecano, information was obtained from some of the Indians themselves that no deformed or monstrous child (though such are very rare) is allowed to live, and similar statements concerning other tribes were received. It is said that a deformed child is smothered, or carried away and left in the brush, or buried alive. But there are also instances of the purely criminal infanticide—of the killing of a normal child by its mother or some of her near female relatives. As a rule the child in a case of this kind is either a mixed-blood (with an American, or white Mexican, or, rarely, a negro father) or the mother is an unmarried girl, ashamed of her condition.

One of the San Carlos men informed the writer that the newborn infant who "has no father" (meaning a halfbreed) is sometimes thrown into brush and abandoned. One specific case was mentioned. Among the Mescaleros, according to one of the tribe, if a monstrous child is born—a very rare occurrence—it is killed. Half-bloods also in most instances are not allowed to live, being destroyed either by induced abortion, or by choking immediately after birth. The latter act is very infrequent and is effected by the grandmother or some relative, not the mother.

Among the Pima, according to Chief Antonio's sister, infanticide is rare. Quite recently one of the educated girls became pregnant by a white man. As the gestation advanced to near the end, she was observed to have a rope hanging from the roof, upon which she pulled herself up and then dropped down. On another occasion she was seen to run wildly against the door and strike it with her abdomen. Finally a live child was born, but it died the same night. The cause of death was not learned. In another case, about 1860, a young mother killed a child 4 or 5 months old. She was "a bad woman who ran much with white men" and eventually contracted syphilis and died. She was seen to take her child with her on the road and while walking far from the village throw it up into the air and catch it. This she repeated several times until once she did not extend her arms and the child fell to the ground. It became unconscious and she went to the graveyard near by where she wanted to bury it. Just then it began to cry again whereupon she killed it, probably by choking.

At Zuñi five specific instances were heard of in each of which a newborn infant came to death through its mother. In two of these cases the children, born out of wedlock, were supposed to have been killed purposely very soon after birth. In three other instances, which may not have been intentional, the babies were suffocated by their mothers rolling upon them at night.

CRIME

The most frequent and most serious transgressions among the Indians here dealt with, at the present time, are deeds of violence due to intoxication. In their normal state the Indians will deceive and some will steal, and these lapses embrace by far the greater part of their criminality. Juvenile offenders of serious grade are rare, and the same is true of female adults, even if those spoken of in the preceding chapter are included. The motives of love, which among the whites are responsible for many serious transgressions, exist, with the exception of jealousy, in less force and to less extent among the Indians, particularly among the unmarried. The fewer wants of the Indian, and the absence of the habit of hoarding property, general among most of those of the Southwest and of northern Mexico, mean the lack of the principal incentives to theft and robbery. Neither is revenge, except temporarily, a very strong motive. It used to be considered obligatory among some tribes, including the Apache, to avenge the murder of one or more of their number by killing some of the enemy, but there is no evidence that beside this custom of war there existed within any tribe itself anything like blood vendetta. Among the predisposing causes to violence the first place belongs to jealousy, especially sexual, and the second to the sentiment of real or supposed wrongs. If such feelings are present and emphasized by liquor, they may result in a fight or murder.

According to the criminal statistics of the Eleventh United States Census, 1890 (Report on Indians, 96–97), out of about 130,000 Indians, there were confined in various prisons on June 1 of the census year, 322 prisoners—307 males and 15 females. Of these, 166 were single, 138 married, and only 4 were less than 15 years of age. The table of the offenses was as follows:

Crimes.	Males.	Females.
Offenses against the revenue law	10	
Offenses against military law	3	
Perjury	3	
Adultery	3	
Fornication		1
Violation of liquor law	52	
Public intoxication	9	8
All other offenses against public morals	2	
Disorderly conduct	3	
All other offenses against public peace	2	
Vagrancy	4	1
All other offenses against public policy	2	
Homicides	91	1
Rape	8	
Abduction	2	
Assaults	22	
Burglary	13	
Robbery	5	
Plain larceny	27	
Grand larceny	31	
Petit larceny	4	1
Larceny of horses	6	
Not specified	4	2
Total	306	14
Grand total	322	

Of the above, homicides and assaults comprise 112 cases (36 per cent), offenses against property 88 cases (29 per cent), sexual offenses 12 cases (4 per cent). The only category where the relative proportion of female offenders is large is that of intoxication.

The information gathered more directly by the author was as follows: Among the Southern Ute murders occur, though rarely; the remaining offenses comprise neglect of family, gambling, drinking, petty thefts, and sexual transgressions, also violations of the game laws.

Among the Apache the principal offenses are wounding and killing. The following data from the "Judges' book" at San Carlos reservation, cursed by the drug-tesvino habit, show the transgressions among that branch of Apache:

Offenses among the San Carlos Apache, as recorded in the Judges' book, during several years

Killing horse.
Fighting (several).
Disorderly conduct (2 individuals).
Fighting, and drinking tesvino (3 individuals).
Cutting a man with a knife.
Carrying away a girl (after drinking).
Drunkenness (many).
Running away with a woman.
Carrying away a married woman.
Drinking tesvino (many).
Resisting a policeman.
Making tesvino (many).
Resisting a policeman and striking him with a stone.
Drunkenness and cutting her husband with a knife.
Beating wives (5 individuals).
Stealing a pony.
Adultery (2 individuals).
Bringing whisky on to reservation.
Branding pony that did not belong to him.
Shooting a man (drunk).
Shooting in camp.
Striking sister.
Rape.
Murder (2).
Getting over the wall of a guardhouse.
Woman stealing moccasins.
Desertion of husband without reason.
Desertion of wife and running away with a school girl.
Policeman shooting his prisoner for beating the policeman's uncle.
Wife beating and attempting to kill a Navaho (drunk).

The causes of divorces among the San Carlos people were recorded in 12 consecutive cases as follows:

1. Incompatibility; both desired to separate.
2. Cruelty and nonsupport (on man's part).
3. Desertion (on man's part).
4. Desertion (on man's part).
5. Desertion (on man's part).
6. Desertion (on man's part).
7. Beating wife.
8. Desertion (on man's part).
9. Man unfaithful.
10. Cruelty (on man's part).
11. Cruelty (on man's part).
12. Cruelty and desertion (on man's part).

In 1888, during a tesvino brawl among the Mescaleros, two men, two women, and a child were shot.[a] Since 1897, when the manufacture of native intoxicants was stopped among this tribe, transgressions against the law have been very rare; in 1903, however, a man and his wife were shot from ambush, probably because they were suspected of witchcraft.

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[a] W. McM. Luttrell, *Report of Commissioner of Indian Affairs*, 289, 1900; see also *Report on Indians*, Eleventh Census, 1890, 151.

During the writer's visit at the White Mountain agency in 1890, a report came in of the wounding of two men in a drunken fight; and in this locality similar data could be multiplied.

The men among all the Apache are very jealous of their wives, looking upon them as their property, and it is not rare, even to-day, for a jealous husband to maltreat his wife, beating her or even cutting her with a knife. Formerly the husband (or the women relatives) used to cut off the unfaithful woman's nose, or to inflict more serious injury causing even death. Several old women each with but a stump of a nose may be seen at the San Carlos reservation to this day. An old man at White Mountain about seven years ago, in a fit of jealous rage, gouged out with his finger one of his young wife's eyes.

Among the Navaho crimes are rare, consisting of theft, desertion, and murder. In 1898 while the writer carried on investigations among this tribe, some Navaho robbed one of their chiefs, Vicente; such an occurrence, however, from all accounts, is very rare. The Navaho steal stock from the Hopi, and on the border commit occasionally petty thefts from the whites; but the majority of the tribe are honest, as are most other Indians who have not suffered degradation. A murder in the tribe occasionally takes place, followed by the suicide of the murderer. Before a married man kills himself "he also wants to kill his wife or wives and children." A prospector on the reservation would run a serious risk of being killed; otherwise whites are never terrorized, and there is no instance on record in which a scientific explorer has been in any way molested. A medicine-man who fell into disfavor was shot in 1900. A few cases of rape were heard of.

Among the Zuñi, the writer was told by the whites who live with and near the tribe, of the killing by these people of two Mexicans. He also heard of the previously reported[a] torturing and executing of supposed witches. According to the informants, when an epidemic or persistent ill fortune visits the tribe, and even in individual cases, a suspicion arises that the affliction is due to witchcraft. A search is then made for the offender and the blame may fall upon some old, friendless man or woman or even upon a young person, who is pressed to confess the witchcraft. If he does so, it is said that he is simply exiled. Several such exiled Zuñi live at the present time at Laguna and Isleta. If the individual does not confess, he is severely tortured and maltreated, and may be hanged or otherwise killed.

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[a] See Julian Scott, *Report on Indians*, Eleventh Census, 1890, 445, and especially Mrs. M. C. Stevenson's The Zuñi Indians, *Twenty-third Annual Report of Bureau of American Ethnology*.

The Pima are very orderly, and instances of violence and even of theft are rare. According to their Sacaton chief, the people in the past believed firmly in witchcraft, a belief which led at times to the commission of murder. Medicine-men who were supposed to have lost their powers of healing or to have turned witches were executed.[a]

The Tarahumare poison one another, though rarely, by administering a certain poisonous spider (*uvar*) crushed in tesvino. One of these spiders is said to be enough to kill a man. The *campamala*, an insect, may also be used for this purpose, but seems to be of doubtful efficacy. Sexual morals within the tribe are quite loose, notwithstanding which jealousy is violent and occasionally leads the husband to kill his wife. Such murder occurs usually when the man is intoxicated. Two homicides of this nature took place within the knowledge of the Tarahumare gobernador at Guajochic during the first five months of 1898.

The Huichol fight among themselves when drunk, but very rarely kill one another. Within recent years they have killed a Mexican, on the road to Santa Catarina. An individual of the tribe who becomes much disliked may be hanged or otherwise killed by the people. According to the nearest Mexican civil authorities,[b] the Huichol are prosecuted for robbery, of which they are occasionally accused by some white settler. Among themselves thefts occur also. If the thief is apprehended he is permitted to make restitution or to pay the value of the stolen property. The Huichol are also prosecuted when it becomes known that they (authorities and population united) have burned or hanged or thrown from a cliff one of their tribe guilty of acts that are looked on in the tribe as sacrilegious or as witchcraft. Ordinary homicide is rare, for when the Huichol fight first of all they divest themselves of their arms (machete, bow, and arrows), and then only buffet one another and pull one another's hair. Sexual crimes have not been brought to the attention of the Mexican authorities, but these occur in the tribe.

Among the Cora, according to the local judge, crimes of violence are of first importance. There are also some thieving and rarely sexual crimes.

The most frequent transgressions among the Otomi (Tula district, Hidalgo) are homicide and assaults and stealing cattle.[c] Their violence is generally committed in drunkenness and often for trivial reasons. They fight with stones and also with knives. When arrested they generally acknowledge their crime, with all its details, and receive the sentence, even if it is capital punishment, with indifference. In the Ixmiquilpan district the proportion of homicides among the Otomi is even greater than among those of the Tula district.[a]

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[a] See Medicine-men, p. 224.

[b] Señor D. Pablo Genaro Santibañez, in Mezquitic, Jalisco.

[c] For much of the information regarding this subject among the Otomi, the author is indebted to Señor Licenciado Ysaac Rivera, judge of Tula.

SUICIDE

Suicides occur among most of the tribes visited, but on the whole they are rare, especially among the women.

No instance of death by suicide was learned of among the Southern Ute.[b]

Among the White Mountain Apache one or more cases of self-destruction occur every year. The means vary. Some individuals accomplish their purpose by means of a knife, others with a rope, gun, or poison, and some jump from a cliff. The main cause of self-destruction is despondency, or, as the Apache expressed it, "his people would not give him anything in his need;" "all her relatives dying, she would die also," etc. A man may kill himself when his wife dies, or a wife may take her own life when her children die, and sometimes suicide occurs during intoxication.

On the San Carlos reservation suicide is rare. Only two definite instances could be learned of by the writer. In one three men prisoners who were to be hanged the next day strangled themselves in the prison by tying cords about their necks, while the second case, which occurred about ten years ago, was that of an old woman who had an altercation with her daughter and in the following night strangled herself with a rope.

Among the Jicarillas suicide is infrequent. A man shot himself after having accidentally inflicted a wound from which he was threatened with slowly bleeding to death.

Among the Navaho rare instances of suicide occur from destitution, despondency, or drink.

Among the Papago suicide is seldom heard of. The means are stabbing, shooting, and hanging.

Among the Pima suicide is rare. During his life Chief Antonio saw three such instances himself and heard of several others. All of these were men, and all shot themselves.

No recent case could be learned of among either the Mohave, Yuma, or Zuñi.

Among the Tarahumare occasionally a despondent individual ends his life by hanging.

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[a] In many of the less civilized tribes there are other forms of native punishment for crime besides that of death, which seem to be reserved only for those believed guilty of witchcraft. The most common punishment (Yuma, Tepehuane, Tepecano, Huichol, etc.) is castigation; another is incarceration with, or more often without, food and drink. Among the Huichol, in addition to all the above punishments, is found that of confining one foot of the criminal in a heavy perforated plank or log. The punishment is apparently meted out to both sexes alike.

[b] On June 30, 1904, the agent of the tribe reports "one suicide . . . the first one known among the Southern Utes." *Report of Commissioner of Indian Affairs*, 1904, 174.

Among the Huichol suicide, though infrequent, occurs in both sexes. The cause is mostly jealousy, destitution, or domestic troubles. The usual method is by hanging.

Among the Otomi, Mazahua, and Aztec suicides are infrequent. The most common means is hanging.

In no instance has the writer heard of a suicide by drowning.

XI. MEDICAL OBSERVATIONS

Pathogeny

Numerous agencies capable of affecting the Indian's health have already been mentioned in other connections.

Irritations of many kinds and an occasional graver disorder are caused by parasites and insects. The most troublesome of these pests, besides the ubiquitous mosquito, are various minute insects found in the warmer and wetter parts of Mexico that burrow into or under the skin. A large number of a species of mites are apt to cause fever, and individuals of another variety, which have a partiality for the toes, cause local suppuration which, if neglected, results occasionally in the loss of a toe. Fortunately the areas of distribution of these insects are restricted. They cause much suffering among the Huastec, east of the Otomi (Hidalgo) region. The bites of certain Mexican ants are very painful. Bites or stings of spiders, centipeds, scorpions, snakes, particularly the rattlesnake, and the bite of the Gila monster, which is of rare occurrence, are additional causes of painful and sometimes dangerous conditions. Scorpions, scarce in Arizona and New Mexico, abound in southern Sonora, Sinaloa, Durango, Jalisco, and Tepic, and stings by them are quite common. They are occasionally fatal to children and may cause death in debilitated adults.[a] Venomous snakes are numerous only in certain localities and are more common in the wet than in the dry season. Bites by snakes other than the rattlesnake were not heard of, but those inflicted by the latter are not rare. The writer saw two Indians, one a child and the other an adult, recently bitten by rattlesnakes. Both of these recovered. He also heard of a number of similar cases among the Indians as well as among mixed-bloods and whites, but in none of these instances did the bite prove fatal. Recovery is usually attributed to the administration of "medicine" or employment of other means, to be described later, but more probably it depends on the nature, quantity, and place of introduction of the poison. Bites of the Gila monster, tarantula, and centiped, although much spoken of, are very rare and are probably never fatal. Intestinal parasites are heard of but seldom.

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[a] The scorpion sting, which the writer once experienced himself, produces locally an immediate and intense burning, then a moderate and slowly extending swelling and tumefaction, with numbness and a high degree of hyperesthesia of the parts near the wound. In the writer's case the numbness lasted several days and slight local dysesthesia was felt much longer. Systemic symptoms in ordinary cases may be wanting, or there may develop a feeling of constriction in the throat, accompanied with difficulty in breathing and an unpleasant sensation in the head. The initial symptoms are nearly the same in all, but the graver ones differ with individuals. The worst effects are said generally to follow the sting of the small white or reddish scorpion. A large black variety is feared but little.

The harmful plants of the region covered include, besides such vegetable poisons as aconite, datura, etc., and poisonous fungi, species that act only on some whites, as well as on some Indians, in a manner similar to poison ivy or sumac; and there are also plants that act, only on a somewhat prolonged contact with the skin, like cantharides (vesicants). Of these plants the only ones that were occasionally heard of as having caused harm to anyone, without being administered as medicine or poison, were those that act by contact, principally species of Rhus. The Indians are sufficiently acquainted with the qualities of many of the harmful plants to avoid them. Tobacco is cultivated by some of the Mexican tribes (e. g., the Tarahumare) and grows wild elsewhere (e. g., in the Otomi region, Hidalgo), it is smoked by the men in all the tribes, but nowhere to excess. The preferred way of using it is in the form of cigarettes, made usually of a little tobacco and much corn husk. It is probably never the cause of any sickness. A species of datura is occasionally added to tesvino by the White Mountain Apache, and in another form is said to be used by the Walapai and the Zuñi. *Peyote* is taken among most of the Mexican tribes, above all by the Huichol, and also to a slight extent by the Papago and Pima. Nothing apparently is known by the Indians visited of the use of any other narcotic plants.

The dry season throughout is, naturally, the more healthful one. The diseases that develop during this season comprise milder forms of malaria, or calentura, numerous cases of ophthalmia induced mainly by flying sand, and in the colder localities a moderate number of affections of the bronchial system, lungs, and pleura. During the wet season malarial disorders become prevalent and more dangerous. Their frequency and gravity increase from the north southward; they are particularly serious along the lower stretches of the Pacific coast. Epidemics are more common and fatal during the rainy season, and the same is true of arthritic troubles and of gastro-intestinal disorders in adults and particularly in infants. On the whole, the rainy season is the period of danger to health and one of increased mortality.

Irregular meals, imperfect preparation of food, and the nature of some of it, as the apparently much relished unripe fruit, give rise to frequent gastro-intestinal disturbances.

Excesses in food and especially in drink, where they occur, are quite as prolific sources of digestive disorders as they are in whites, but serious consequences of either are met with but seldom. The Indian drinks readily to excess on all favorable occasions, and yet there were seen, especially among the Arizona and New Mexican tribes, no such slaves to drink, such constant and craving topers, as occur among the whites. The conditions are worse in this respect among the Aztec, Otomi, and Tarasco, and it is there only that one meets with the alcoholic tremor, the mental obtuseness of the drunkard, and inherited nervous affections, due to alcoholism, in the progeny.

Want of proper clothing, bed covering, and shoes in the women results undoubtedly in some physical discomfort, but on the whole does not seem to have the effect it might have on people accustomed to other conditions. The women go barefooted in any kind of weather. They were seen by the writer to wade thus in snow slush. They pay very little attention to wet and cold weather, and the children expose themselves to rain with much pleasure. Catarrhs sometimes follow, and the exposure is probably not always without ill effect on the female pelvic organs, yet really serious consequences seem to be rare. In several instances in the schools it appeared that the reverse condition, namely, a more abundant clothing than usual, had a bad effect on the health of the children.

As to occupation, there is none among the male or the female Indians that leads to either disease or deformity. The carrying of water jars on the head by the girls tends to make their bodies straight and symmetrical.[a] It has no effect at all on the form of the skull.

Contact with whites, besides leading to drunkenness, is responsible for the introduction of venereal diseases, and where this contact is greatest, as in some parts of northern Mexico, it is chargeable with the spread of contagions. The lack of hygienic precautions is largely responsible for the spreading and sad effects of numerous diseases among the tribes. Among the most striking examples of this is the prevalence of ophthalmia and consequent blindness, and the spread of pulmonary tuberculosis. An irritation of the eyes results from the sand that is blown about during the dry season almost daily in some localities, or from the smoke within the dwelling, or from an infection. In some individuals recourse is had to remedies, but more usually the eyes are simply cleansed and rubbed with a piece of any convenient old rag, and the people continue to follow their usual vocations. The writer saw a middle-aged woman more than half blind through ophthalmia trying to cook for the family and to work at the same time in the smoky khuva on a basket, the price of which was to bring needed provisions. No precaution is taken against communication of the trouble to others in the dwelling. Unless a white physician interferes, such cases are generally allowed to run their course, the end being often total blindness. The percentage of blind in some of the tribes is appalling. As to pulmonary tuberculosis, a patient with the disease lies in the hut which is common to the family, and often in immediate proximity to other members. Next to him is usually placed a piece of a broken vessel, into which he expectorates, but often he expectorates simply into the ashes on the floor of the dwelling or out of the door. In eating and drinking he uses the same utensils as the other members of the family, and his food is the same. The family feels the gravity of the disease, but it is usually in absolute ignorance as to its nature and the danger of contagion.

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[a] Little girls, naturally very playful, are early employed in helping in the household, particularly with the younger children, which they often carry on their backs. Owens (Natal Ceremonies of the Hopi Indians, *Jour. Amer. Ethnol. and Archæol.*, 1892, II, 164), speaking of the Hopi, thought this too severe a strain, tending to produce the numerous bowlegs he saw among the women. But this is an error. The writer measured and examined more than 50 adult women of the tribe (one of the measurements taken being the maximum circumference of the leg, when generally the whole limb up to the knee was exposed), and also numerous girls, and did not observe a single instance of bowleggedness. He observed no case of stooping shoulders, or other acquired deformity, and did not see a tibia or a femur with abnormal curvature among either the Hopi or other Pueblos.

In general, ignorance among the Indians, as elsewhere, must be regarded as the most potent pathogenic agency.

Diseases among the Indians of the Southwest and of Northern Mexico

The subject of diseases among the Indians was approached through direct observation and inquiries and, near the conclusion of these, through an official circular requesting information on a number of important pathological conditions from all the physicians of the United States Indian service.

Direct investigation into disease among the Indians met with numerous difficulties not ordinarily encountered elsewhere. There is much distrust of the white man and shyness, especially on the part of the women, in his presence. Other impediments are the antagonism of the Indian medicine-men; the scattered condition of the people; the limited time for observation; and the difficulties of language and of obtaining accurate descriptions of symptoms. Besides it is very often impracticable to make the chemical tests and microscopical examinations essential to the proper recognition of numerous morbid conditions. These limitations prevented more or less effectually in the different tribes many desirable and detailed observations. Yet in numerous instances at least some of the distrust was overcome, and the writer visited the sick in their houses and had others come for medicine. Other sources of information were individuals who consented to be measured and the chiefs, resident physicians, or other authorities, from whom much was learned in response to interrogations. The records concerning the various tribes, though made in the main without preconceived opinions, and some of them gathered several years apart, show not a little uniformity. There are also special features with certain of the peoples, and these are likely to be increased in number and accentuated with the increase of knowledge. It is hoped that the deficiencies in these records will stimulate further scientific inquiry into the subject wherever opportunity offers.

The Southern Ute are subject to various digestive and pulmonary disorders, including consumption. Insanity is very rare, and no one could tell of having seen a case of epilepsy in the tribe. Convulsions in children occur. There are but few cripples, and in every case seen the deformity was due to some accident. Many children die from "colds" and intestinal diseases. The cases that came under the writer's observation consisted mainly of more or less chronic disorders of the digestive organs; there were also several cases of cough, one of pulmonary tuberculosis, two of enlarged prostate, several instances of sore eyes, and a fracture of both bones of the forearm. Syphilis and gonorrhea exist, but it was not possible to ascertain to what extent. There was no trace of rachitis or of any pathological cranial deformation.

Among the Apache in Arizona and New Mexico the disease that is assuming the greatest importance is pulmonary consumption. There is scarcely another tribe in the Southwest or in northern Mexico in which tuberculosis is so prevalent. On the San Carlos reservation, among a population of a little more than 3,000, there occurred from 1901 to 1903, according to Dr. R. H. Ross's report to the Indian Bureau, 255 deaths, of which 95, or over 36 per cent, were due to different forms of tuberculosis. The writer found tuberculous glands or recent scars due to them in more than 6 per cent of the school children at San Carlos.

Among the Mescaleros the conditions are even worse. The deaths and causes of death among this people, who number about 450 individuals, during the five years ending July, 1903, were, according to Dr. W. Harrison's report to the Indian Bureau, as follows:

SCHOOL CHILDREN

Year.	Tuberculosis.	Pneumonia.	Gastritis.	Other causes.
1898–99	2			2
1899–1900				1
1900–1901	2			
1901–2	[a] 12	2		
1902–3	[a] 4			

OTHERS OF ALL AGES

1898–99	4	3		3
1899–1900	6			3
1900–1901	4	1		5
1901–2	2	1	1	1
1902–3	6	2	2	2

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[a] All boys.

During the writer's stay with this tribe in the early part of 1905 several of the school children suffered with various forms of tuberculosis, two dying of tubercular meningitis.

On the White Mountain (Arizona) reservation cases of tuberculosis are less common, but are more frequent again among the Jicarillas (see the statistical portion of this chapter).

Both epilepsy and insanity are occasionally encountered among the Apache. The writer's Apache interpreter at White Mountain (Arizona), about 35 years old, had known personally five epileptics—three young men and two young women. Dr. S. D. Bell, in 1900 the White Mountain (Fort Apache) agency physician, during the time of his stay on the reservation, saw two cases of epilepsy, both in young men, and three of insanity—one in an old man, one in a middle-aged man, and one in a schoolboy; information was also obtained of one middle-aged man and one child imbecile. Insanity in the female sex was said to be very rare, as among other tribes in the Southwest and northern Mexico.

One of the writer's White Mountain Apache guides had a boy who, from nervousness, could not eat the red-fleshed pitahaya; "it looked to him too much like blood."

It was denied that the tulipi causes any sickness, although an excess of it induces vomiting. The after effects are weakness and headache, but these seldom last more than half a day; there is no loss of appetite, rather the reverse. In nursing women there seems to be no great effect on the quantity of the milk, but the writer has seen nursing infants who were made more or less sick by such milk.

On the San Carlos agency there were, in the early part of 1905, two old men partially insane. One of these was entirely harmless, and was said to have "pretty good sense," but would often walk about singing aloud and acting queerly. He was laughed at by the others, and took this ridicule good naturedly. The other man was also quite harmless, but was said to have a tendency to steal and also delusions. The writer observed both cases and diagnosed them as light forms of dementia.

A San Carlos man was seen who had paresis of both legs. He could extend and contract his limbs, but could not stand up. He had fallen from a horse a number of times, but did not connect any of these accidents with his ailment, which began very gradually about seven years ago. The condition of the patient at the present time is about stationary.

As to nervous affections in children, there were in January, 1905, at the San Carlos school, four of the larger girls who suffered from nervous spells which, from the description given, were hysteria. The attacks, according to the matron, were in all quite alike in the main particulars. They began with crying aloud and profuse shedding of tears; then there would be excitement, or a stage of semirigidity. In no case was a real loss of consciousness or a total loss of self-control noticed. One of the girls, after some preliminary crying or excitement, would throw herself on her bed in a sort of stupor. Two other girls each had once a spell of a similar nature. The girls, in general, seem to be well acquainted with the condition. They are not frightened by it, but when a case occurs run to the patient, press hard into the pit of her stomach, and rub her wrists and eyes. Several girls at the Rice school had occasional "crying spells," but no motor symptoms.

No case of chorea was noticed in either the San Carlos or the Rice school, and but one of an apparently organic nervous trouble (Rice school), which consisted of a form of aphasia in a half-grown girl. At San Carlos a Mohave (Yavapai) child about three years of age was in a partially palsied condition, as a result of the severe labor attendant on its birth. Up to about 11 years of age incontinence of urine, apparently of nervous origin, is occasionally met with in the Apache and other tribes, in children of both sexes; the trouble disappears without treatment.

Among the Mescaleros a high-grade imbecile boy was seen, about 12 years old. His father was dead and his mother a consumptive. The mother says that the boy when about 8 months old was frightened by a whirlwind and became as he is. Two other feeble-minded boys were heard of.

Among the Jicarillas there were in 1903, according to Mr. Johnson, the agent, several deaf and dumb children. These children, although born of apparently healthy parents, have been thus since birth. In 1904 there were in the tribe two insane men—one 35 and one about 45 years of age. One of these became insane through drunkenness.

Among the White Mountain Apache, and to a less extent among the Jicarilla Apache, goiter occurs, but no case of this affection was seen or reported among the San Carlos or the Mescaleros. No information of cretinism could be obtained.

One boy was found on the San Carlos reservation, having a partly anterior and partly lateral spinal curvature apparently of tuberculous origin; he did not appear to be a full-blood.

Smallpox scars are comparatively rare among the Apache; this is rather strange in view of the former extensive contact of the tribe with the Mexicans. Pneumonia and bronchitis occur in all branches of the people, and the same seems to be true of malaria.

A case of apparent elephantiasis of the scrotum in a San Carlos Apache was observed in 1904 by Doctor Ross, the San Carlos agency physician.

Affections of the breasts or nipples incident to nursing are much more rare among all the Apache than among white women. Pelvic affections are also rare. A San Carlos woman had uterine and lumbar pains in the seventh or eighth month of pregnancy; she had suffered in a similar manner for about a month before her previous child was born; though wanting relief she would not be examined.

In only one small child on the San Carlos reservation, out of about 500 seen, were there present distinct signs of malnutrition, and none such was met with among the other Apache.

The Apache school children complain little of itching in any part of the body; but the spines of the *xez* cactus (Opuntia leptocaulis) often produce a hard swelling that itches. Among the larger boys in the San Carlos school four cases of gonorrhea occurred within a year; there were none among the girls.

Impetigo contagiosa in children is quite common among all the Apache. It seems to occur in all parts of the body. A Mescalero girl was seen who was much affected with it about the ears, and a small abscess developed in the right cheek. A case of herpes zoster was seen in a Mescalero about 75 years old. Numerous cases of warts on the hands existed at the time of the writer's visit among the Mescalero school children.

Among the Walapai, stomach and intestinal disorders were found to be common in the adults as well as in the young; in this respect the school children fared much better than those in the camp. Consumption is not rare, and according to Doctor Perkins, the agent, it is sometimes very rapid in its course. In one case which the Doctor noticed, the patient succumbed in two months. At the beginning of 1902 an epidemic of pneumonia developed among the school children; it was attributed indirectly to the introduction of steam pipes and more abundant clothing. In the early part of 1904 an epidemic of measles visited the school and spread to the Havasupai, causing a large number of deaths among the children. Venereal diseases are not rare in the tribe, but reliable data were not obtainable.

The Navaho, except perhaps those around Fort Defiance, are a healthy tribe. The country they inhabit is among the most salubrious regions in the Southwest. The most common disorders in the tribe are those affecting the digestive tract. Like other Indians, the Navaho have learned within recent years to make an inferior kind of bread in which they use much cheap baking powder; besides this the bread is not baked well, and being eaten in large quantities indigestion necessarily results.

The increasing use of large quantities of black coffee must also have a bad effect. Headache, not infrequently complained of, and vertigo, prevalent to some extent, are probably largely due to disturbance of the digestive organs, although they sometimes follow prolonged exposure to the sun of the habitually uncovered head. Signs of syphilis, especially the tertiary signs, are very rare. The writer has treated or observed one case apparently of typhoid fever, one of mitral insufficiency, one of infantile paralysis, and one of a moderate degree of dementia and light tremor (in an old man); no other nervous diseases, or insanity, idiocy, epilepsy, or rachitis, were encountered. Tumors are said to occur, though they are rare; and the same is true of female diseases of a serious nature. Rheumatic pains, particularly in the lumbar region, are quite common in elder people. They lead occasionally to stooping. Whooping cough occurs in children. In 1897 there was an epidemic of smallpox. Malaria is not common; however, the writer had occasion to treat two plain, though not very severe, cases of intermittent fever. Simple ophthalmia and irritation of the eyes are quite common. Chronic ophthalmia, granular lids, and narrowing of the orbital orifice by adhesion proceeding from the canthi, are met with in some of the aged. Total blindness is very infrequent. Some young men between 18 and 25 suffer with facial acne. According to Mr. Wallace (formerly a druggist, now with a trader on the northern part of the reservation), the Navaho, like other Indians, expose themselves much in winter; as a result colds are frequent, and being generally neglected, lead sometimes to more serious pulmonary troubles. Not a few children die each winter from the results of exposure and other privations, and in summer from the eating of unripe fruit or other injurious food.

The most common diseases among the Hopi are ophthalmia and gastro-intestinal disorders. The ophthalmias are most often directly or indirectly the result of irritation produced by wind-blown sand. The fine sand enters the eyes, and as these are generally rubbed with unclean hands or pieces of clothing inflammation is soon produced and kept up. As a result, a comparatively large number of persons become more or less blind. Gonorrheal ophthalmia and trachoma are met with also. There is some rheumatism, which, however, does not lead to any deformation. Senile arthritis, causing stiffness of the spine and stooping, is also met with. At the writer's visit there were on the first two mesas at least five cases of pulmonary tuberculosis. In every case the disease was of the active type and attended with considerable sweating and high temperature. Among the women of Mishongnovi four cases of goiter were seen and others were heard of, but in the other Hopi villages the writer found but one case of this affection. Chiefs Hani and Caloqui assured the writer that, at the time of his visit (1900), there were no insane, idiot, deaf and dumb, congenitally blind, or congenitally deformed, persons among the Hopi on the First mesa, but there were several imbeciles in the other villages. An epileptic lived there some years ago, and another was learned of at Oraibi. One man living on the First mesa was partially deaf (cause unknown), and one had defective speech.

Of diseases among the Hopi children there were seen several cases of favus, three of chicken pox, three of dry eczema, two of scrofula, one of strabismus, numerous instances of conjunctivitis and some of cough; none of congenital syphilis, spinal or limb deformation, or rachitis.

Among the Zuñi the most prevalent and fatal diseases are those of the intestinal tract (enteritis of different forms but not typhoid), pneumonia, tuberculosis (particularly pulmonary), and various infections. Some cases of diphtheria developed in the winter of 1901–2. Smallpox occurs occasionally and is very serious; 250 Zuñi died of it in winter of 1898–99, and it has been the chief cause of the decrease of Zuñi population. The writer has seen many lighter gastro-intestinal disorders, some chronic arthritis (in the old), and numerous sore eyes; also a case of hard but painful ventral tumor in a woman of middle age. According to the official report of Mrs. J. A. Palin, field matron, there occurred among the Zuñi in the fiscal year 1901–2, 51 deaths; during the year 1902–3 there were 56 deaths (18 babes, 13 girls, 10 boys, 6 women, and 9 men), of which 3 were due to diphtheria, 3 to consumption, and the others chiefly to influenza with complications, and intestinal diseases. One case of varicose veins (moderate degree) was seen in an elderly woman, and she said that some other women were similarly afflicted, though the cases were not severe or numerous. Only one individual was learned of, a full-blood boy 9 years old, who was apparently congenitally deaf and dumb. The writer could find no epileptic, though epilepsy has occurred in the tribe.

In 1900 there was in the Zuñi village a girl "exhibitionist," who on several occasions stripped herself nude and thus ran about in public. Information was obtained about one individual, a man of about 25 years of age, with a mild form of insanity. Another young man, healthy at the time of the writer's visit, has had several spells of recurrent mania. No idiots exist or have been known in the tribe, but light degrees of feeble-mindedness occur now and then. Twelve blind individuals were found; in all the condition had been acquired through smallpox or inflammations. Venereal diseases exist, to what extent could not be ascertained. Serious tertiary signs were seen in none, those of congenital syphilis probably in one.[a]

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[a] According to Mrs. M. C. Stevenson, a case of lupus or epithelioma exists now in the tribe in a woman. Mrs. Stevenson believes that perineal lacerations are frequent.

The following letter was recently received by the writer from Dr. E. J. Davis, the Zuñi agency physician:

"During the two years of my stay among the Zuñi I have gained but little direct knowledge concerning diseases among their women. I am rarely consulted in cases of gynecological lesions. They are not, I feel safe in saying, as prevalent among these people as among American women.

"The men seem to be free from the ravages of venereal diseases to the extent with which many other tribes are cursed though they are occasionally infected. I have not seen an acute case of syphilis. The prevailing diseases are gastro-intestinal; affections of upper respiratory tract in winter season; and a large number of cases of simple conjunctivitis. The children have, in addition to the above, a number of cutaneous disorders, prominent among which is impetigo contagiosa."

See also Yarrow, H. C., Medical Facts relating to the Zuñi Indians of New Mexico, *Rocky Mountain Medical Review*, Colorado Springs, 1880–81, I, 191.

The Papago appear to be healthier people than some of the other Southwestern Indians. In 1902 there were no blind, deaf or dumb, idiots, epileptics, or hunchbacks in the San Xavier district. There was one insane. No one of the informants could tell the writer of a person afflicted with goiter. Pulmonary tuberculosis is well known and feared, but cases of the disease are not numerous.

Among the Pima tuberculosis in its different forms, including scrofula, is quite frequent. According to an estimate made by the writer while with the tribe in 1905, there are about three persons, mostly young,[a] with developed pulmonary tuberculosis, to each 1,000 persons in the tribe. Deaths due to tubercular diseases of all classes are, according to Dr. A. E. Marden, the resident physician, more numerous than those from all other causes combined. According to statistics submitted by this physician to the Commissioner of Indian Affairs, the sanitary condition in the Pima boarding school from 1898 to 1903 was as follows:

1898–1899—Pupils, average, 175.
Epidemic of measles, 150 cases, 1 death.
1899–1900—Pupils, average, 180.
Epidemic of measles, 53 cases, no deaths.
Pneumonia, 4 cases, no deaths.
1900–1901—Pupils, average, 240.
2 deaths from tuberculosis.
2 deaths from enteric fever (typhoid).
1901–1902—Pupils, average, 275 to 325.
2 epidemics of grippe, 75 and 32 cases, 2 deaths.
Epidemic of enteric fever, 24 cases, 3 deaths.
3 deaths from tuberculosis.

Besides the above, there occur among the children a moderate number of cases of trachoma, numerous instances of conjunctivitis in all forms and quite numerous instances of impetigo contagiosa. During the writer's first visit at Sacaton in 1902 the disease list of Dr. W. K. Callahan showed the following cases treated, and the order in which they developed, during the month of January:

Case.	Disease or injury.	Case.	Disease or injury.
Boy	Dental caries.	Man	Psoas abscess.
Man	Acute dysentery.	do	Tubercular glands in the neck.
do	Influenza.	Woman	Dental caries.
Baby boy	Capillary bronchitis.	do	La grippe.
Woman	Diabetes.	do	Hysteria.
Man	Laryngitis.	Child, male	Capillary bronchitis.
Woman	Acute dysentery.	Man	Felon.
do	Phthisis.	Child, male	Diarrhea.
Man	Retention of urine, enlarged prostate.	Man	Lacerated hand.
		Woman	Thorn in the palm of the hand.
Woman	Angina pectoris.	Man	La grippe.

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[a] Of four consumptives seen at Sacaton in 1905, one was a boy about 10; two were girls, one about 12 and the other about 18; and one a boy about 19 years of age.

Case.	Disease or injury.	Case.	Disease or injury.
Man	Wire cut of hand.	Child, male	Lichen.
Child, male	Tubercular hip disease.	Man	Granular lids, chronic.
do	Impetigo.	Boy	Acute dysentery.
Man	Conjunctivitis.	Woman	La grippe.
do	Trachoma.	do	Dental caries.
Child, male	La grippe.	Girl	Foreign body in the eye.
do	do.	Man	General anasarca.
Man	Dental caries.	Girl	Tonsilitis.

Of rarer diseases there existed among the Pima one case apparently of elephantiasis of the foot and one case of marasmus. Chief Antonio recollects but a small number of imbeciles and insane in the tribe; a few of the latter exist now. One insane man developed a desire to kill his wife and then ran away to the hills, but was not violent. Later on he recovered. It was apparently a case of mild, acute mania. Chief Antonio never heard of any child in the tribe born blind or deaf. He knew of one case in which a child never learned to walk.

The Pima say that if a stalk of the bush *cul-ick-un-ek* (Dondia suffrutescens) wounds a man and is not promptly removed, it is liable to give rise to blood poisoning and may have fatal results. The *hā-van tātat* ("crows'-feet": Phacelia, probably infundibuliformis) is a plant growing on the flats along the Gila, contact with which is followed by inflammation of the skin. The Pima say that when it touches the naked legs or arms it produces sores which, though they do not extend beyond the parts that came in contact with the plant, will last from three weeks to a month before they heal.

The Sacaton midwife and medicine-woman says that female disorders of a serious nature are uncommon. One of her patients, an old woman, had an umbilical hernia. Such a hernia, usually of small dimensions, is found occasionally in the little children of this tribe, as well as among the Maricopa. Breast affections are very infrequent; rarely an abscess develops in the side of the breast.

In children foul breath is met with remarkably seldom (the same applies to the other tribes examined). Within three or four years there were three cases of chorea among the school children at Sacaton. Only one of the schoolgirls, and she probably a half Mexican, was known by the present matron to have had some form of hysteria. After crying this girl became rigid, remaining so for some time. Crying spells occur occasionally in others, but are usually controllable; they are not attended by motor derangements. Complaints due to menstruation among the schoolgirls are rare; occasionally, however, a girl will complain of pains during the period. In four of the schoolgirls and one boy there were found quite large scars on the head on which the hair did not grow. These are said to have been produced in early childhood by sores, probably bad cases of impetigo, which are common outside of the school.

Yellowish teeth, front teeth discolored, and multiple small pits in the enamel were seen in quite a number of the Pima school children of both sexes. In none of these were there any other signs of malnutrition or rachitis. There was no case of skull deformity due to premature synostosis or other pathological agency. In fact, no case was observed among all the Indians examined, though rare instances of such deformities are encountered among Indian skulls.

Of the Mohave, especially those about Needles, many suffer from various minor disorders of health. The most common complaints are those of the stomach and intestines, and muscular rheumatism. Serious pathological conditions are not often seen. Venereal diseases are said to prevail, but indications thereof on the exposed parts are very rare. Occasionally a woman dies within a week or two after childbirth. An epidemic of pneumonia developed at the Fort Mohave Indian school in 1901 which was commonly attributed to the order requiring the Indian children to wear shoes. An instance of hermaphroditism occurred among the Mohave north of Needles within the memory of the writer's native informant.[a]

From all that could be gathered, under adverse circumstances, about the Yuma, it appeared that the most prevalent diseases among them are malaria, a number of cases of which occur in persons of all ages after each annual overflow of the Colorado (May or June), and venereal troubles, acquired mostly from whites about Yuma. One young man was seen in an advanced stage of acute pulmonary tuberculosis. The same year (1902) the agency physician reported two cases of the disease among the "uneducated" contingent of the tribe, and he also speaks of two cases of scrofula, with five or six of malaria, among the children in the school. The most common minor complaints are of the gastro-intestinal tract. In the school children there were very few cases in which even a suspicion of congenital syphilis could be entertained. If the disease is as frequent in adults as it is thought to be, it is probable that, owing to the effects of the disease and neglect, most if not all babes affected by syphilis die in utero or during infancy. There was very little sickness among the school children at the time of the writer's visit; but one advanced case of tubercular glands of the neck and a few instances of eczema and impetigo were found.

The most common disorders among the Opata are those of the digestive system. In infants they are often dangerous. Malarial fever is also prevalent. Among 22 women from San Miguel valley whom the writer measured, 7 had goiters. In two cases the enlargement was unilateral (on the right side) and in five bilateral (all larger on the right). The natives have no definite conception as to the cause of this disease and no knowledge of how to cure it. It has existed in the general region for a long time.[a] All but one of the goiters seen were of moderate size. No case of the disease was observed among the men, but the writer was told it occurs in them also, though much more rarely than in the women. Venereal diseases are said to be quite common, but destructive syphilitic lesions on the exposed parts of the body are rare. Rickets is unknown among persons of pure blood. Pulmonary tuberculosis occurs, but is not prevalent. It seems to attack the half-breeds oftener than the full-bloods. Insanity and idiocy are said to be very infrequent. In his many years of experience with the Opata, Doctor Alderman, the American physician-miner at Tuape, knew but one insane person (a man with a delusion that he owned everything) and but a single feeble-minded individual. No information could be obtained about children born blind or deaf. The only cases of serious nervous disease learned of were one of paralysis agitans in a woman addicted to the use of liquor, and one of long-present choreic movements in a male subject.[b]

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[a] Sometimes a "woman wants to be man." She is "just naturally that way;" they know of no other cause. Similar cases, also instances of men dressing in the garb of women, were heard of in other tribes.

The Yaqui seem to be remarkably healthy, as they are a sturdy people. Along the valleys, particularly during the midsummer rainy season, there occur among them, as among the Mayo, numerous *calenturas* or "fevers," probably of malarial nature. No goiter or deformity was seen in the tribe, and, as among the rest of the Mexican tribes visited, tuberculosis is infrequent.

Owing partly to the unhealthful lowlands in which many of them live a portion of the year and partly to the irregularity of their lives, with the too frequent use of tesvino, the Tarahumare are subject to numerous disorders. The most common of these are affections of the digestive organs, and the next in frequency are the *frios* or calenturas (various forms of malaria). An affliction much spoken of and often fatal is dolores costales (the term probably including both pleurisy and pneumonia). Contagious diseases, particularly variola, visit the people occasionally and are much feared. Venereal diseases are occasionally introduced, but the people guard against them. Insanity is very rare, but cases of temporary mental aberration following drink are well known. Deaf and dumb individuals occur in the tribe, but it was not possible to learn whether the condition was congenital or acquired. Blindness is more frequent and is mostly the result of smallpox or injury. Consumption seems to be very rare, and among such of the Tarahumare as were seen there was no instance of any degree of scrofula. There is no rachitis. In the numerous Tarahumare skulls and other bones examined the only pathological conditions, excepting a few injuries were senile arthritis, a few cases of dental caries, some marks of inflammatory or suppurative process about the alveoli, one small osteoma on the dorsal surface of the frontal bone, and one abscess in the superior maxilla. Among the less recent bones, as among similar osteological remains of the Indians of other tribes in the Southwest and northern Mexico, there was not a single suggestion of rickets, syphilis, tuberculosis, or cancer.

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[a] "The [water of the] Oposura is supposed to be productive of the tumour in the neck, called in Switzerland the gôitre. The Saguaripa, and many other streams in Sonora are thought to produce similar effects." Hardy, Travels in the Interior of Mexico in 1825, 1826, 1827, & 1828, 443, 1829. "The Opatas of Oposura are disfigured by goiter, but this disease seems to be confined within 3 leagues of the town." Bancroft, Native races, I, 588.

[b] See Notes on the Indians of Sonora, Mexico, *American Anthropologist*, n. s., VI, no. 1, Jan.-Mar., 1904.

Among the southern Tepehuane during the dry season ordinarily there is but little sickness. The most frequent disorders, besides digestive troubles, are headache, muscular rheumatic pains, calenturas (malarias), and acute chest diseases. Epidemics are rare.

Among the Tepecano, in Jalisco, the most frequent causes of death among the adults are "fever" (in all probability severe malaria or typhoid), calentura (mostly less severe malaria), dysentery, and "a chest disease of brief duration, accompanied with pain and fever" (probably pneumonia). The mortality of children is large, being due chiefly to intestinal disorders. Calentura is also said by the people to be not infrequently fatal among children. Smallpox has appeared occasionally, causing numerous deaths. A certain percentage of women die as the result of accidents or from diseases while pregnant, during labor, or in the puerperium. The most common minor affections are pains in the muscles, back, or joints, headaches, some vertigo (the last-named mainly the effect of drinking to excess, which, however, is not frequently done), and conjunctivitis. Tumors occur infrequently; of what nature they are could not be learned. Insanity is very rare, and is believed to be incurable.[a]

The diseases which the Huichol are mostly subject to are calenturas, gastro-intestinal disorders, dolores costales (pleurisy or pneumonia), and muscular or lumbar rheumatic pains. The writer was told of individuals who died of some acute affection "of the head" accompanied by severe vertigo. Dysentery occurs; it is very probably, in some cases at least, of malarial origin. Most children who die succumb to diarrhea, most adults to diseases affecting the respiratory organs, other than tuberculosis, which, although it occurs, is rare. Among ten young to middle-aged men who were interrogated as to the different sicknesses they passed through since their childhood, in two the answer was none; in one, occasional headache, calentura, some pains in the stomach; in one, smallpox, calentura, cough; in one, some form of enteric fever, calentura; in one, stomach troubles and occasionally vertigo; in one, smallpox, stomach trouble, and occasional headache; in one, stomach disorder; in one, calentura, pneumonia, or pleurisy; and in one, pneumonia or pleurisy, pains in the back, vertigo, and stomach disorders. Among all the Huichol seen not one was blind, but there was found one deaf and dumb child.

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[a] See also The Religion of the "Chichimecs," etc., *American Anthropologist*, n. s., v, no. 3, July-Sept., 1903, 385.

The most common disease among the Cora is calentura. Outbreaks of smallpox are not infrequent and are much feared. Intestinal disorders among infants are common. Pulmonary tuberculosis, though not unknown, is rare.

Among the Tarasco the minor gastro-intestinal disorders were met with most often. However, there was but little opportunity among this tribe for extended observations.

The Otomi (Hidalgo), besides being commonly subject to digestive disorders of lighter grades, show more often than other Indians visited, excepting the Aztec, the common ill effects, both inherited and acquired, of the abuse of intoxicants. Epilepsy and other neuropathic conditions are met with quite frequently; but there are districts in which the people are sturdier and healthier.

Among the Tlahuiltec, according to personal observations and the information of the "padre" who works among them, the most common diseases, besides the frequent effects of alcoholism, are various calenturas and pneumonia. In consequence of the abuse of aguardiente many individuals show tremors, premature feebleness, and other disorders. In their largest village there are but a few really old people. The health of the women, who drink less, is superior to that of the men.[a]

SUMMARY

The preceding details and the general information obtained in the study of Indian diseases may be summarized as follows:

On the whole the health of the Southwestern and north Mexican noncivilized Indians is superior to that of the whites living in larger communities. The advantage of the Indian lies principally in the greater freedom from those various morbid conditions that arise through deficient inheritance, from those that in the white race frequently accompany such processes or periods of life as teething, puberty, menstruation, gestation, puerperium, menopause, and senility, and from malignant growths; while the only disadvantage of the Indian consists in a possibly weaker resistance of his system to a few of the contagions.

Of afflictions of definite parts of the organism among the Indians of the Southwest and northern Mexico it is possible to give the appended information.

Pathological conditions of the blood are very rare, but anemia is occasionally met with in the latter stages of malaria, or, in a light degree in some of the taller school girls, who have become debilitated.

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[a] See also chapter dealing with medicine and treatment, and individual notes in detail tables.

As to the blood glands, the spleen suffers secondarily in malaria, as in whites. The thyroid degenerates occasionally into goiter, particularly in certain regions and individuals (almost exclusively females).

Lymph glands are apparently the seat of but one affection, namely, scrofula. Even this is rare among the more primitive peoples, but a moderate number of examples can be found in every tribe of the more civilized Indians.

The prostate gland was found enlarged in a few instances.

Affections of the breast glands are much less common in Indian than they are in white women.

Diseases or defects of the circulatory apparatus are very infrequent. Among more than 2,000 individuals examined the writer found but 3 cases of organic heart trouble (all valvular insufficiencies) and not one pronounced instance of advanced arterial sclerosis. No definite information could be obtained about any case of apoplexy, though some rather sudden deaths are remembered. Varicose veins are rare. Direct examination in many hundreds of individuals failed to show one very pronounced instance. Hemorrhoids are also infrequent. No case of a nevus came under the observation of the writer.

Diseases of the respiratory apparatus are, on the other hand, relatively common and cause numerous deaths. Among the noncivilized tribes the chief of the more serious of these affections is pneumonia; among the tribes on the road to civilization this begins to be rivaled by pulmonary consumption. This latter disease, which in all probability was extremely rare, if it existed at all, in the prehistoric Indians, and was seldom seen up to a century ago, is gradually becoming everywhere more common, even among the Indians of the Sierras. It attacks especially the adolescents and younger adults. It follows a very rapid course in some individuals and moderately rapid in others, and is nearly always fatal; in a few only it becomes chronic. Judging from descriptions, pleurisy is not uncommon at certain seasons, while milder grades of bronchitis and allied affections are met with quite often during the cold weather. No instances of severe asthma, of "false," or of membranous croup were encountered.

Disorders of the digestive apparatus are very common, but they are rarely, except in infants, of a serious nature.

Contrary to all expectations, typhoid is very rare.

Forms of bloody diarrhea or dysentery, often probably of malarial origin, attack the Indians, children as well as adults, in certain localities, especially in the lowlying parts of Mexico.

Intestinal parasites (tapeworms) are heard of but seldom.

No case of appendicitis, peritonitis, ulcer of the stomach, or of any grave disease of the liver, was observed.

Constipation, while by no means as common as among the whites (and especially as among white women), was heard of quite often.

An occasional case of dropsy shows the occurrence of nephritis. Kidney disorders in pregnancy and eclampsia appear to be rare.

Diseases of the sexual organs, excepting syphilis and gonorrhea, are very seldom alluded to, or indicated by any external signs, among those who approach or are approached by the physician. The women usually deny their existence. Perineal and uterine lacerations, prolapsus, and other morbid conditions presumably should be rather common, but whatever evidence is obtainable in the matter contradicts such an opinion. Amenorrhea, dysmenorrhea, and metrorrhagia occur, though rarely.

Venereal diseases, while carefully guarded against—in some instances with apparent success—prevail more or less in the tribes near railroad centers and near larger white settlements. Notwithstanding the unhygienic condition of the Indians, neither syphilis nor gonorrhea is commonly attended by great destruction of tissue or grave general consequences. The bones of the syphilitics, however, ultimately become affected as in whites. In women syphilis generally conditions premature births, and the infants are usually dead. Inherited signs of syphilis in living children are very uncommon.[a]

With few exceptions, diseases of the skin are restricted to cases of eczema, favus, or ulcers (pemphigus, and especially impetigo contagiosa) in the children, acne in adolescents or young adults, and some ulcers, due to neglect, in the older.

Of nervous and mental disorders headache is quite common; vertigo is heard of occasionally; hysteria of light-to-moderate form is met with occasionally in growing-up girls; tremors occur in those addicted to drink; epilepsy and weak-mindedness are quite rare, though perhaps not more so than among whites; insanity and paralysis are very infrequent, and high-grade idiocy is almost unknown. Of many nervous or mental pathological conditions nothing at all could be learned.

Diseases and defects of the sense organs include numerous opthalmias, some trachoma, and occasionally a cataract. Strabismus is very rare. Narrowing of the lids in consequence of chronic inflammation of the conjunctiva is common in old people. Corneal ulceration and opacities are not infrequent. In every tribe, but particularly among some of the Pueblos, there are found a number—in some instances a relatively large number—of individuals who have lost their sight in consequence of some eye affection. In a few the cause has been an attack of smallpox. Minor disorders of vision are common among the more advanced Indian scholars. Ear diseases and defects of hearing are quite rare, even in the aged. In a few tribes there are from one to several deaf and dumb.

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[a] In the older burials in the Southwest and northern Mexico, the bones show no syphilis, or at most a very few doubtful cases.

Dental caries is not rare, though much less frequent than among the whites. It is usually a premolar or a molar that is affected. Occasionally the gum or alveoli become involved, resulting in suppuration. Necrosis of importance was not seen in the living or in the bones examined. Defects of the palate in an Indian of full blood have not been met with, and but one minor case of harelip came to notice.

Of contagious and infectious diseases not before specially mentioned, the most dangerous, and one by which none of the tribes visited has been spared, is smallpox. Localized epidemics of measles are quite common. The disease attacks both children and adolescents, and occasionally, usually in the absence of proper treatment, is attended with mortality much greater than is the same disease among whites. Where early hospital treatment was afforded, the fatal or even grave cases were rare. Scarlet fever, curiously, seems to be very uncommon, if it occurs at all in these regions. The writer could learn of no case of it either personally or from the resident physicians or from the Indians. Whooping cough, on the other hand, is not very rare; it does not seem to be more severe or dangerous than it is among the whites. Diphtheria of moderate severity existed in 1902 and at other seasons in the Albuquerque school; it also occurred within recent years at Zuñi. Influenza has been reported from a number of localities among the Southwestern Indians. Pneumonia, in isolated cases, has appeared in an epidemic form. Parotitis is seldom heard of. Malaria, known as "fever," frios, or calentura, occurs more or less, in various forms, among all the tribes. Usually it is not fatal in the north and on the highlands, but assumes more dangerous, including hemorrhagic and not infrequently fatal, forms in the valleys and especially in the lower coast lands of northern Mexico. Leprosy is not heard of, but there were observed a few cases of a condition allied to elephantiasis. The *pinto* malady was not met with, though among the Mexican Indians there were allusions to its existence farther south (*Guerrero*, etc.)

Malignant diseases, if they exist at all—that they do would be difficult to doubt—must be extremely rare. The writer heard of "tumors," and saw several cases of the fibroid variety, but has never come across a clear case of an epithelioma or other cancer; nor has he as yet encountered unequivocal signs of a malignant growth on an Indian bone (see notes in Bibliography).

Rheumatic affections are quite common, but are very seldom of a serious nature. They seem to be restricted to the muscular variety, lumbago, and the arthritis of senility. Of rachitis, or osteomalacia, not a trace was encountered either in the living or in the bones, and though goiter exists, there was found no case of cretinism.

Hernia is rare, and the few cases seen or heard of were nearly all of the umbilical variety and nearly all in children.

Pathological obesity does not exist (see Obesity, pp. 156–157).

For albinism, which is restricted almost entirely to the Hopi and Zuñi, see special section at the end of the chapter.

Fractures of bones are infrequent, more rare than among white people.

In general, then, the morbid conditions that occur frequently, and those that occur more rarely among the Southwestern and the north-Mexican Indians than among average white Americans, are as follows:

Frequent among Southwestern Indians

Affections of the gastro-intestinal tract.
Affections of the respiratory organs.
Affections of the eyes.
Muscular rheumatism and senile arthritis.
Smallpox; measles.
Malaria; dysentery.
Pemphigo contagiosa (in children).

Rare among Southwestern Indians

Anemia.
Affections of breasts.
Diseases of heart, arteries, and veins.
Asthma.
Affections of the liver.
Affections of the female sexual organs (including those of pregnancy and puerperium, and lacerations).
Many affections of the skin.
Dental caries.
Cancer.
Rachitis.
Hernia (femoral, inguinal).
Idiocy (high-grade).
Insanity.
Nervous diseases (excepting epilepsy).
Scarlatina.
Bone fractures.

A few special remarks may be made in this place concerning syphilis among the Southwestern and the north-Mexican natives before the advent of whites. As already remarked, the disease in the Indian affects the bones as it does in the whites, and in some of the recent cases, of which there are good examples from Alaska, the destruction of the bony tissues, particularly in the skull, is great; if, therefore, syphilis existed before the Spaniards reached this country, signs of it should be at least occasionally discovered in the ancient burials. But the bones and particularly the skulls from the old burials are, generally, free of signs characteristic of the disease; and this is true of the bones from ancient graves in California, the Northwest coast, and other localities, exclusive of the southeastern mounds. If this easily communicable disease existed for any length of time before the whites (Columbian and post-Columbian) came, it is difficult to see how, with the well-known widespread intercourse among the Indians, whole great regions could escape it. It may be remarked that signs of the disease are absent also from the older burials from Peru and other localities in South America. From some of the regions mentioned the osteological collections are extensive and have been made in a thorough manner.

Albinism

In studying the defects of pigmentation we meet with two apparently related classes of phenomena. One is a regular, more or less complete and extended congenital lack of the usual pigmentation, or what may be termed *albinism* proper; the other being a generally irregular, more or less incomplete and extended, depigmentation occurring at some period during life, and known more commonly as *vitiligo*. Both of these conditions, originally probably neuropathic, yet seemingly radically different, were met with among the Indians visited, but in the southwestern United States the cases found are comparatively few in number and restricted to a few tribes, while no instance of either condition was encountered among the Mexican Indians, with the exception of the Tarahumare, among whom an albino was found by Hartman,[a] and possibly the Mayo, among whom are said to occur, far down the Mayo river, individuals with light hair, skin, and eyes. The Mexican Indians are much scattered, however, and all detailed inquiry is very difficult.

Among the Hopi and the Zuñi albinism has been known since early historic times, and apparently shows no tendency toward either a marked increase or a marked diminution. The writer learned of one case of complete albinism among the Navaho[b] and of another at Isleta, besides which he saw a woman 50 years of age, a partial or atypical albino (yellow hair, but moderately brown skin), among the Southern Ute, and a case of vitiligo in a male Papago of about 55 years. Finally, in four full-blood Mohave girls at the Fort Mohave school were seen lighter, but not quite vitiligo-like, spots on the exposed portions of the otherwise normal-looking skin.

The writer made it a point to see all the albinos among the Hopi, and was able to measure all but one as well as to inquire somewhat into their family history, for at the present time the condition is doubtless propagated to some degree through heredity. Among the Zuñi he was able to examine but two of the men (see pl. XXVI).[c] As the Hopi and Zuñi tribes are closely related physically and as the albinism occurring among them is of the same nature, the data relating to them will be presented conjointly.

The writer found among the Hopi (March, 1900) 11 and among the Zuñi (same year) 6 albinos. The proportion to the whole population was 5.5 per thousand among the Hopi and 3.8 per thousand among the Zuñi.

Of the Hopi albinos, 3 were males and 8 females; of the Zuñi, 3 males and 3 females; total, 6 males and 11 females. Nine out of the total

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[a] C. W. Hartman, The Indians of North-western Mexico, *Congrès international des Américanistes*, 1894, 128-129. Stockholm, 1897.

[b] Bourke (p. 460) mentions an albino family among the Navaho.

[c] See also notes on the Zuñi albinos in Mrs. M. C. Stevenson's The Zuñi Indians, *Twenty-third Report of Bureau of American Ethnology*.

17 albinos were children, 8 adults. All 17 were complete albinos, but of slightly differing shades. There was found in the two tribes no instance of partial albinism or vitiligo.

The general appearance of the albinos in both tribes was much alike. Their physiognomy, irrespective of their slightly variant color, differed from that of the other Indians. Their skin seemed to be of ordinary texture, but more sensitive to exposure than in the full colored. It was pink or white with a slight flush, and the exposed parts usually showed a more or less pronounced sun discoloration, much like the ordinary sunburn among the whites. On the body the skin looked absolutely normal; on the face, neck, and hands, in the adults, however, it was rather redundant and wrinkled, or in folds, giving these parts in some cases myxedematous-like appearance. The lips were in many somewhat irregular, exfoliating, cracked, or sore.

The hair ranged in color from that of the unbleached flax fiber (pale yellowish) through various shades of yellowish and brownish—always with a slight golden luster—to medium brown. In no instance was there any trace of red in the hair. The eyebrows and eyelashes as a rule were lighter than the hair, in some cases practically colorless. The consistency and quality of the hair showed no features strikingly different from those found in ordinary Indians of the same tribes.

The eyes were light gray or light blue to moderate gray-blue, with sclera white—very much like eyes of similar shades in blond white people. In no case was the iris colorless, with pink reflection, as in the albino rabbit. In every instance there was a more or less marked nystagmus and heliophobia. The vision was not strong, but shortsightedness was not noticed.

Owing to the blinking eyes and the more or less abnormal skin, the face was generally somewhat sheepish in expression, reminding one of the faces of some epileptics. In most of the adults the nose was thicker than the average, while in the majority of cases the lips were thickened and, as already mentioned, somewhat irregular in shape. These conditions are undoubtedly very largely the effects of irritation by wind and sun. In four cases the teeth were somewhat crowded or irregularly set. In one of the Zuñi men half of the teeth had been lost. In no case was there found any decided retardation in dentition or any anomalies of the teeth. The palate was in all fairly regular.

Measurements of the body showed that neither the children nor the adults differ much from normal individuals of similar age and full color. In no instance were there seen signs of scrofula, congenital syphilis, or rachitis. The pulse, respiration, and temperature in two of the albinos, who were in perfect health, approached closely the average of the tribe; in other individuals these tests were interfered with by various minor disorders. All those, however, who could be tested for strength by the dynamometer were found to be weaker than average full-colored individuals of the same age in the same tribe.

Among the Hopi the albinos are known as *ko-lo-ko-cha-te* (white people). Neither among the Hopi nor among the Zuñi are they ostracized or looked on as inferiors. They marry full-colored individuals of the other sex, but they themselves are generally ashamed of their condition. They are not inclined to play or to take part in the life of the village as others do. In associating with them the writer found all of them to be sensitive, bashful, and easily irritated or made to cry. With two exceptions among the men, they appeared from slightly to moderately submedium in intelligence; the testimony of teachers and others agreed with this conclusion.

An inquiry into the family history of an Indian is seldom very satisfactory. According to the scanty and perhaps not always reliable data obtainable, in most instances the albino was the second child of the mother; in one case he was the third; in one case the eighth (last). In the nine cases (children) here considered the father, the mother, and all the other children were of normal color. In one family the second and sixth children were albinos; in one family the second and third; and finally one woman had three children, all albinos. In all these instances the father, mother, and remaining children, where such existed, were full-colored. The albinos married to full-colored individuals seldom raise any, and never large, families of their own. This point seems of importance and needs further attention. The Indians have no rational idea as to the cause of albinism, and have not noticed that it runs in certain families.[a]

There is among the Hopi considerable intermarriage of distant relatives, but marriage is regulated by the clan system, which prevents all close interbreeding; on the whole this factor is not greater or even as great as in some still smaller tribes, for example, the Maricopa, among whom no albinism has been recorded. There are indications that the actual, original cause of the condition lies in the nervous centers, and is of a degenerative nature, being propagated in the tribe through hereditary influences. No definite clue as to any special predisposing or exciting cause has been found in connection with the series here reported. Prolonged lactation of the youngest in common with a previous child was considered, but this is frequent among all Indians and takes place with all the children in families where only single albinos occur. Careful and detailed observations in this line should be made in future by the resident physicians in particular.

The following are the results of the examinations of Hopi and Zuñi albinos in detail; the Hopi subjects are arranged by villages.

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[a] It is a supposed consequence of transgressing some tabus by the pregnant woman, or of making, in an erroneous way, certain *pahos* or prayer sticks; but the majority of those questioned had no explanation.

(1) Kivanochwuinima (Pueblo of Mishongnovi): Girl about 10 years of age. Father and mother normal; only albino in the family; is the third child. Hair straight, unbleached flax color, with slight golden reflex; eyelashes and eyebrows very pale; eyes grayish blue, light yellowish about the iris; face pinkish white, exactly as in many white blonds. Features regular, expression slightly sheepish. Teeth regular, second dentition fairly advanced; all front teeth and first permanent molars (in all 24 teeth) fully erupted. Hands and feet slightly dusky (sunburn). Height, 131.3 cm.; diameter antero-post. maximum of head, 15.8; diameter lateral maximum of head, 14.2; height of head (biauric. line-bregma), 13.0; face height to nasion, 9.7; face height tc crinion, 15.4; diameter bizygom. maximum, 12.7. Occiput slightly flattened. Body normal. Intelligence slightly below average (teacher's estimate).

(2) Maina (Mishongnovi): Girl about 14 or 15 years old. Father and mother normal; the other children normal; is the second child of the family. Hair straight, flax color, eyelashes and eyebrows lighter. Eyes medium blue. Face pinkish white; hands and feet show effects of exposure. Teeth normal, 28 of second dentition erupted. Face normal. Is not very bright in school; intelligence in general slightly below medium. Height, 151.5 cm.; diameter antero-post. maximum of head, 17.6; diameter lateral maximum of head, 14; height of head (biauric. line-bregma), 12.7; face height to nasion, 11.2; face height to crinion, 16.4; diameter bizygom. maximum, 13.2.

(3) Komaiaunima (Mishongnovi): Girl between 15 and 16 years of age. Father and mother normal; only albino in the family; is the second child, both the first and third normal. Hair straight, medium to light yellowish brown; eyebrows and eyelashes light flax color. Eyes grayish blue. Color of face and body exactly as in white blonds, i. e., pinkish white. Shows sunburn on exposed part of limbs and on face. Features normal. Expression not very bright. Intelligence not above the average, possibly slightly below. Teeth normal, 28 second teeth fully erupted. Height, 151.5 cm.; diameter antero-post. maximum of head, 17.3; diameter lateral maximum of head, 14.4; height of head (biauric. line-bregma), 13.55; height of face to nasion, 11; height of face to crinion, 17.9; diameter bizygom. maximum, 13.4.

(4) Naqualashtiva (Mishongnovi): Man about 30. Parents normal. Four children; is the second. No albino relation. Fairly well nourished. Face slightly dull, not Indian-like in type. Hair straight, very light brownish; eyebrows and eyelashes nearly colorless; eyes grayish blue. Nystagmus (lateral). Very slight, if any, compression of the occiput. Lips thick. Upper lip somewhat defective in middle line, notched—a slight degree of harelip. Intelligence fair. No upper wisdom teeth; lower incisors irregularly set, crowded. Sexually potent. Genitals slightly submedium in size, normal in shape. Body normal. Had a wife; no conception; did not live long together; was jealous. Height, 173 cm.; diameter antero-post. maximum of head, 18.4; diameter lateral maximum of head, 15.6; height of head (biauric. line-bregma), 14.35; face height to nasion, 11.8; face height to crinion, 19.4; diameter bizygom. maximum, 14.1.

(5) Shakwentiva (Mishongnovi): Man about 33 years of age. Parents normal; had five children; subject is the second. No albino in family or relatives. Hair straight, light brownish. Eyes more grayish than blue. Body well developed; medium (for Hopi) height. Face coarse, like that of some epileptics, not Indian-like; some strabismus, nystagmus (lateral). Somewhat sheepish expression. Intelligence fair, but certainly not higher. Would not be measured.

(6) Puliasnima (Shupaulovi): Girl about 6 years old. Father and mother normal; has an older albino sister, a bright child, at Phoenix; family of six, first child normal, second Kučasnima, the albino in Phoenix, the third normal, fourth normal, fifth normal, sixth albino, Puliasnima. Hair is straight, of a very light flax color. Eyebrows and eyelashes very light (not white). Eyes clear medium blue. Face very pinkish and blond; hands and feet somewhat darker (sunburned). Features ordinary, not of the regular Indian type. Lower incisors crowded, otherwise teeth and dentition normal. Not bright. Height, 108.3 cm; diameter antero-post. maximum of head, 16.6; diam-

eter lateral maximum of head, 12.8; height of head (biauric. line-bregma), 12; face height to nasion, 9.3; face height to crinion, 14.9; diameter bizygom. maximum, 11.3.

(7) Sivenka (Shupaulovi): Woman about 28 years old. Father and mother normal; family of five or six children; is the second child; all the other children normal. Hair flax to light brown in color, straight; eyelashes very light flax color (not white). Eyes grayish blue. Skin light, pinkish white. Features normal; look ordinary. Not very bright. Teeth normal; dentition normal (32 second teeth erupted). Hands and feet quite small, somewhat sunburned. Body (nude) normal, color exactly as in whites. Rather frail, but not emaciated. Breasts submedium, approach conical in shape; nipples quite well developed, areola light, but slightly darker than surrounding skin. Genitals, externally, normal, covered with thin, not very long, light flax-colored hair. Stature, 151.8 cm.; diameter antero-post. maximum of head, 16.0; diameter lateral maximum of head, 14.2; height of head (biauric. line-bregma), 13.15; face height to nasion, 11.1; face height to crinion, 16.5; diameter bizygom. maximum, 12.6. Head normal, as in all the albinos, but shows a quite marked cradle-board occipital flattening. Married three years to a full-colored Hopi; no conception.

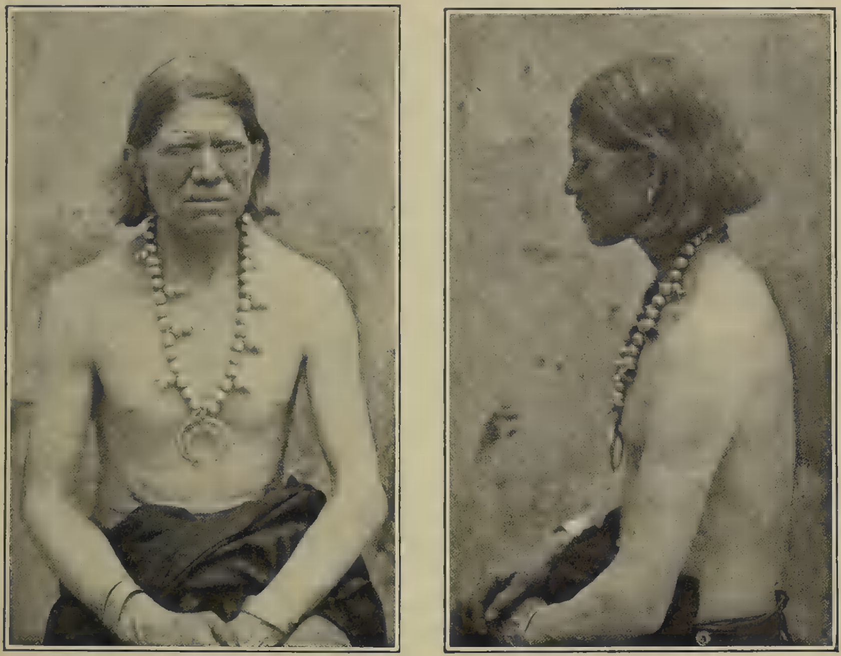
(8) Sikiahoinima (Shongopovi): A girl about 7 years old. Parents normal; had three children; subject is the second. No albino among relatives. Very well nourished; face quite bright, nice; otherwise very similar in every particular to the other albinos. Hair straight, light brown in color. Eyebrows and eyelashes lighter. Eyes bluish. Skin as that of a white child. Cries and sobs at slight provocation. Teeth normal; dentition normal (for that age). Height, 100.7 cm.; diameter antero-post. maximum of head, 15.7; diameter lateral maximum of head, 13.4; height of head (biauric. line-bregma), 12.35; face height to nasion, 8.8; face height to crinion, 14.6; diameter bizygom. maximum, 11.9.

(9) Lominimka (Shongopovi): Woman about 35 years of age. Parents normal; had two children; subject is the second. No relatives albinos. Fairly well nourished; features regular, not Hopi-like. Hair straight, of flax color; skin pinkish white. Eyes bluish. Teeth normal; dentition normal. Intelligence fair. Height, 145.1 cm.; diameter antero-post. maximum of head, 17.0; diameter lateral maximum of head, 14.6; height of head (biauric. line-bregma), 12.5; face height to nasion, 11.2; face height to crinion, 18.4; diameter bizygom. maximum, 13.5. Had a male child by a full-colored Hopi; the child, which was brought to the writer, is full-colored and looks exactly like other normal Hopi children.

(10) Komaweniouma (Oraibi): Man about 55 or 60 years old. Stooped, but well developed and healthy. Parents and family normal; mother had four children; he is supposed to have been the second. Intelligence fair. Nystagmus. Color pinkish, as in others. Flax-colored, straight hair. Face, albino type, wrinkled.

(11) Oleson (Zuñi, pl. XXVI): Male about 35 years of age. Parents normal. Is the seventh of eight children. All the rest of the children and all relatives full-colored. Skin pinkish white; where exposed it is dusky and furrowed. Hair light brown. Eyebrows and eyelashes lighter. Eyes gray. Features quite coarse, but body is well developed. The face shows sunburn, the forehead, protected by the hair, is white. The skin of the neck is much corrugated. The skin on the hands looks like that after scalding. Is left-handed. Eyes blink in light (as in all the described albinos). Some lateral nystagmus. Had been married and had one child by his wife; the child was full-colored. Height, 162.7 cm.; diameter antero-post. maximum of head, 17.7; diameter lateral maximum of head, 14.3; height of head (biauric. line-bregma), 13.75; face height to nasion, 11; face height to crinion, 17.2; diameter bizygom. maximum, 13.45. Pulse (6.30 p. m.), 48; respiration, 18; temperature, 98.8; present state of health normal. Pressure force, right hand, 37 kilos; left hand, 38; traction force, 19.5 kilos (Mathieu dynamometer).

(12) Cumashki (Zuñi, pl. XXVI): Man approximately 45 years old. Parents full-colored, normal. No albinism in relatives. Is the third child out of six, four of whom were normal. A boy albino, second child, died. Color of skin closely similar to that of whites, except on the face, where it is quite rosy. Hair pale yellowish,



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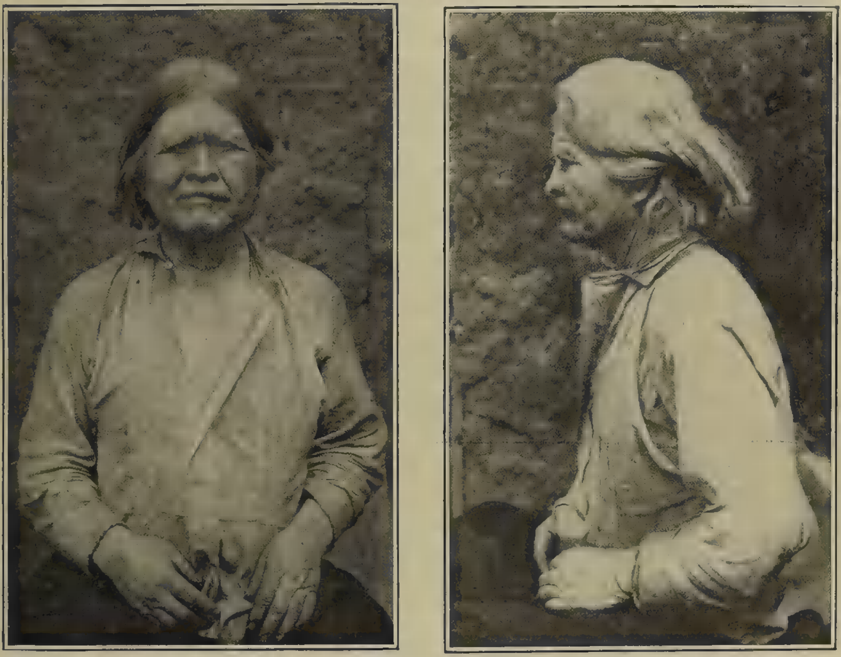

CUMASHKI

ZUÑI ALBINOS

Eyebrows and eyelashes nearly colorless. Eyes light blue. Is very well nourished and in general normally developed. The skin, however, of the face, neck, forearms, and legs has a somewhat myxedematous appearance. Teeth somewhat irregularly set, much worn, nearly a half lost through caries; impossible to determine whether or not the dentition was complete. The eyes show lateral continuous nystagmus. The man is of fair intelligence and good-natured. The lips are slightly thickened and irregularly curved. The subject was never married. Height, 166.8 cm.; diameter antero-post. maximum of head, 18.8; diameter lateral maximum of head, 15.6; height of head (biauric. line-bregma), 14.7; face height to nasion, 11.2; face height to crinion, 18.3; diameter bizygom. maximum, 15. Pulse (3 p. m.), 64; respiration, 16; temperature, 99; present state of health, normal. Pressure force, right hand, 30 kilos; left hand, same; traction force, 20 kilos (Mathieu dynamometer).

The thickness and quantity of hair in all the albinos is about the same as in those full-colored.

Diseases among Indians in Various Parts of the United States

The second part of the inquiry into diseases among the Indians consisted, as before mentioned, in inquiries addressed by the Bureau of Indian Affairs to the physicians in the Indian Service. These inquiries were extended to all the reservations and schools in the United States. The list to be reported on, arranged by the writer, was in the following form:

Report of Dr. ———, physician at ——— agency (or school), under date of ———, 19—, on diseases, etc.

[Abbreviations: C.=children; A.=adults.]

Albinism, complete.				Albinism,[a] partial.				Goiter.				Cretinism.				Insanity,[b] all forms.			
Male.		Female.		Male.		Female.		Male.		Female.		Male.		Female.		Male.		Female.	
C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.

Epilepsy, all forms.				Idiocy, all grades.				Deaf and dumb.				Monstrosities, all varieties.		Spinal curvatures.	
Male.		Female.		Male.		Female.		Male.		Female.		Report individual by cases.		Male.	Female.
C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.			Nature of deformity.	Nature of deformity.

Tuberculosis.												Latest census of tribe.	
Pulmonary.				Bones and joints.				Glandular.					
Male.		Female.		Male.		Female.		Male.		Female.		Male.	Female.
C.	A.	C.	A.	C.	A.	C.	A.	C.	A.	C.	A.		

---

[a] Vitiligo.

[b] Record each case separately, giving sex, age, and principal symptoms.

Reports were received from 102 localities, and in numerous instances these were accompanied by additional data or by explanatory notes. The reports are not, however, equally accurate. It was evident that the physicians endeavored to give as far as possible correct information, but on many of the larger reservations it is exceedingly difficult to do so. The physician and those who could aid him in filling out the blank have usually a good knowledge of those natives only who live within a moderate distance of the agency, and the data concerning those in the remote parts of the reservation can not but be defective. The reports from the schools and the smaller tribes are more reliable, and so probably are those on albinism, insanity, and the deaf and dumb, conditions known widely among every people. On the whole, it will be well to regard the data here presented as approximate; further, it should be remembered that, unfortunately, these data pertain to a population embracing both mixed-bloods and full-bloods, although the former are not numerous.

The detail reports are given, tabulated alphabetically by the tribes, in the Appendix; the separate notes from the physicians, some of them very interesting, are added to this chapter. In abstract, the reported conditions were as follows:

Albinism complete existed in only—

1 Cheyenne (male adult), at the Seger school, Okla., in population of 551.
1 Crow (male adult), at the Crow agency, Mont., in population of 1,826.
10 Hopi (2 male and 2 female children, 3 male and 3 female adults), at the Hopi agency, Ariz., in population of 1,878.
1 Menominee (male child), at the Green Bay agency, Wis., in population of 1,283.
5 Navaho (1 male child, 2 female children, 1 male and 1 female adult), at the Navaho agency, N. Mex., part of the tribe, in population of 12,000.[a]
1 Papago (female child), at the Phoenix Indian school, Ariz., in population of 725.
1 Laguna Pueblo (male child), at the Laguna agency, N. Mex., in population of 2,102.
4 Zuñi (2 male and 2 female adults), at the Zuñi agency, N. Mex., in population of 1,521.

In all there were 24 complete albinos (8 male adults and 5 male children, 6 female adults and 5 female children) living at the end of 1904, and 21 of these were among the Indians of Arizona and New Mexico.

Partial defects of pigmentation were reported in—

1 Cherokee (male adult), at the Eastern Cherokee school, N. C., in a population of 1,453.
3 Blackfeet or Sioux (2 male and 1 female adults), at the Cheyenne River agency, S. Dak., in a population of 2,477.
1 Sioux (male adult), at the Fort Peck agency, Mont., in a population of 1,651.
1 (tribe ?) (female adult), at the Kiowa agency, Okla., in a population of 3,675.
3 Menominee (all male adults), at the Green Bay agency, Wis., in a population of 1,283.
1 Navaho (male child), at the Navaho agency, N. Mex., in a population of 12,000.

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[a] None reported from other parts of the tribe. There is a Hopi admixture among the Navaho, which may possibly account for some of the albinos.

1 Osage [a] (male adult), at the Osage agency, Okla., in a population of 1,895.

1 Papago [a] (male adult), at the San Xavier settlement, Ariz., in a population of 514.

1 Piegan (male adult), at the Blackfeet agency, Mont., in a population of 2,059.

1 (tribe ?) (male adult), at the Warm Springs agency, Oreg., in a population of 786.

1 Southern Ute [a] (female adult), at the Southern Ute agency, Colo., in a population of 962.

1 Winnebago (male adult), at the Omaha and Winnebago agency, Nebr., in a population of 1,085.

In all 16 cases of partial defects of pigmentation, among which were 13 males and 3 females, and 15 adults with but 1 child.[b] It is plain that the condition differs essentially from the congenital albinism proper, which occurs in both sexes in nearly an equal proportion. It is also much more scattered and corresponds in no way with true albinism.

Goiter: The instructive reports on this pathological condition are as follows—

6 Apache (1 male adult, 1 female child, and 4 female adults), at the Fort Apache (White Mountain) agency, Ariz., out of a population of 2,058, or 2.9 per thousand.

1 Apache (female child), at the Jicarilla agency, southern Colorado, in population of 782, or 1.3 per thousand.

2 Cherokee (male adults), at the Eastern Cherokee school, N. C., in population of 1,453, or 1.4 per thousand.

36 Cheyenne (8 male and 28 female adults), Tongue River agency, Mont., out of population of 1,408, or 25.6 per thousand.

1 Cheyenne (female adult), at the Seger school, Okla., in population of 551, or 1.8 per thousand.

151 Blackfeet or Sioux (24 male and 127 female adults), at the Cheyenne River agency, S. Dak., in population of 2,477, or 61.4 per thousand.

1 Chippewa (female child), at the Leech Lake agency, Minn., in population of 3,387, or 0.3 per thousand.

2 Chippewa (female children), at the Mount Pleasant school, Mich., in population of about 300, or 6.7 per thousand.

1 Cœur d'Alène (female adult), at the Colville agency, Wash., in population of 577, or 1.7 per thousand.

12 Crows (1 male child, 5 male and 6 female adults), at the Crow agency, Mont., in population of 1,826, or 6.6 per thousand.

7 Sioux (2 male and 5 female adults), at the Fort Peck agency, Mont., in population of 1,651, or 4.2 per thousand.

8 Indians (all female adults), at the Fort Berthold agency, N. Dak., in population of 1,210, or 6.6 per thousand.

3 Indians (all female children), at the Genoa school, Nebr., in population of about 300, or 10 per thousand.

4 Hopi (all female adults), at the Hopi agency, Ariz., in population of 1,878, or 2.1 per thousand.

4 Oneida (1 male and 3 female children), at the Tomah school, Wis., in population of 150, or 26.7 per thousand.

4 Oneida (1 male adult, 2 female children, and 1 female adult), at the Oneida agency, Wis., in population of 2,055, or 1.9 per thousand.

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[a] No report, but subject known personally to the writer.

[b] It is very probable that quite a number of cases belonging to this category were not reported. Nevertheless the condition is by no means frequent.

14 Menominee (5 male and 9 female adults), at the Green Bay agency, Wis., in population of 1,283, or 10.9 per thousand.

2 Mission Indians (both female adults), at Round Valley, Cal., in population of 643, or 3.1 per thousand.

1 Navaho (female adult), at the Navaho agency, N. Mex., in population of 12,000, or 0.08 per thousand.

2 Navaho (female adults), at the Navaho school, Ariz., out of population of 493, or 4.1 per thousand.

1 Osage (female adult), at the Osage agency, Okla., in population of 1,895, or 0.5 per thousand.

1 Pawnee (female adult), at the Pawnee agency, Okla., in population of 606, or 1.6 per thousand.

3 Piegan (1 male and 2 female adults), at the Blackfeet agency, Mont., in population of 2,059, or 1.5 per thousand.

3 Rio Grande Pueblos (all female adults), at the Santa Fé agency, N. Mex., in population of 566, or 5.3 per thousand.

6 Shoshoni or Arapaho (2 male and 4 female adults), at the Shoshoni agency, Wyo., in population of 1,659, or 3.6 per thousand.

1 Sioux (female child), at the Chamberlain school, S. Dak., in population of about 70, or 14.3 per thousand.

2 Sioux (female adults), at the Lower Brulé agency, S. Dak., in population of 470, or 4.3 per thousand.

8 Sioux (3 male and 5 female adults), at the Pine Ridge agency, S. Dak., in population of 6,690, or 1.2 per thousand.

39 Sioux (2 male children, 5 male adults, 3 female children, and 29 female adults), at the Rosebud agency, S. Dak., in population of 4,977, or 7.3 per thousand.

2 Sioux (1 male and 1 female adult), at the Sisseton agency, S. Dak., in population of 1,874, or 1.1 per thousand.

10 Sioux (4 male and 6 female adults), at the Standing Rock agency, N. Dak., in population of 3,514, or 2.8 per thousand.

5 Sioux (1 male and 4 female children), at the Yankton agency, S. Dak., in population of 1,702, or 2.9 per thousand.

3 Sioux (all adult females), at the Crow Creek agency, S. Dak., in population of 1,025, or 2.9 per thousand.

28 Ute (11 male and 17 female adults), at the Uinta agency, Utah, in population of 791, or 35.4 per thousand.

1 Southern Ute (female child), at the Fort Lewis school, Colo., in population of 178, or 5.6 per thousand.

1 Yuma (female adult), at the Fort Yuma reservation, Cal., in population of 650, or 1.5 per thousand.

In the aggregate there were reported 376 cases of goiter, from 36 localities,[a] while from 66, or nearly two-thirds of all the localities heard from, goiter was absent; the proportion of cases to the total Indian population was 3 per thousand. Of all the cases 21 per cent were among the males and 79 per cent among the females, showing that among the Indians goiter is four times as prevalent among the latter. It is well known that the female sex also is more liable to this affection among the whites and other races.[b] Seven per cent of the cases were among children and adolescents, showing that in quite a number of instances the condition starts before the period of growth is completed. The extent of the disease in different tribes is indicated below. The detailed data make it plain that goiter does not depend on any condition inherent in the tribes, but is due to purely local agencies, the nature of which is not yet well known.

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[a] Goiter is also quite prevalent among the women at the La Pointe, Wis., Chippewa agency, but accurate data from that locality are wanting.

[b] For a summary of data on goiter in various parts of the world see Hirsch, Handbook of Geographical and Historical Pathology, London, 1885, II.

Goiter among Indians—proportion per thousand of population

Tribe.	State.	Per thousand.
Blackfeet and Sioux	South Dakota	61.4
Ute	Utah	35.4
Oneida	Wisconsin	26.7
Cheyenne	Montana	25.6
Sioux (branch)	South Dakota	14.3
Menominee	Wisconsin	10.9
Indians (Genoa school)	Nebraska	10.0
Sioux (branch)	South Dakota	7.8
Chippewa	Michigan	6.7
Crows	Montana	6.6
Indians (Fort Berthold agency).	North Dakota	6.6
Southern Ute	Colorado	5.6
Rio Grande Pueblos	New Mexico	5.3
Sioux (branch)	South Dakota	4.3
do	Montana	4.2
Navaho	Arizona	4.1
Shoshoni and Arapaho	Wyoming	3.6
Mission Indians	California	3.1
Apache (White Mountain).	Arizona	2.9
Sioux (branch)	South Dakota	2.9
do	do	2.9
do	North Dakota	2.8
Hopi	Arizona	2.1
Oneida	Wisconsin	1.9
Cheyenne	Oklahoma	1.8
Cœur d'Alènes	Washington	1.7
Pawnee	Oklahoma	1.6
Piegan	Montana	1.5
Yuma	California	1.5
Cherokee	North Carolina	1.4
Apache	Southern Colorado.	1.3
Sioux (branch)	South Dakota	1.2
do	do	1.1

Cretinism, notwithstanding the prevalence of goiter, is a very rare condition. The reported cases were:[a]

1 Indian (female adult), at the Fort Belknap agency, Mont., in population of 1,234.
1 Navaho (female child), at the Navaho agency, N. Mex., in population of 12,000.
1 Winnebago (male adult), at the Omaha and Winnebago agency, Nebr., in population of 1,085.

In all these localities goiter is very rare. In many tribes in which goiter is relatively common cretinism is entirely absent.

Insanity: The reports on insane Indians show more or less rare instances of this condition in all parts of the country. They embrace the following:

1 Apache (male adult), at the San Carlos agency, Ariz., in population of 2,553.
1 Apache (female adult), at the Fort Apache agency, Ariz., in population of 2,058.
1 Apache (male adult), at the Jicarilla agency, Colo., in population of 782.
1 Apache (male adult), at Fort Sill, Okla., in population of 298.
3 Blackfeet or Sioux (1 male young, 1 male and 1 female adult), at the Cheyenne River agency, S. Dak., in population of 2,477.
1 Indian (male adult), at the Colville agency, Wash., in population of 457.
10 Crows (7 male and 3 female adults), at the Crow agency, Mont., in population of 1,826.
2 Iroquois Oneida (female adults), at the Oneida agency, Wis., in population of 2,055.

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[a] A few cases are said to exist also among the Chippewa in northeastern Wisconsin.

2 Indians (1 female, young, and 1 female adult), at the Kiowa agency, Okla., in population of 3,679.
1 Nespelim (male adult), at the Colville agency, Wash., in population of 457.
2 Navaho (male adults), at the Navaho agency, N. Mex., in population of 12,000.
2 Osage (1 male and 1 female adult), at the Osage agency, Okla., in population of 1,895.
2 Piegan (male adults), at the Blackfeet agency, Mont., in population of 2,059.
4 Pima and Papago (all male adults), at the Pima agency, Ariz., in population of 6,600.
1 Pueblo (female, young), at the Laguna agency, N. Mex., in population of 2,102.
2 Shoshoni or Bannock (1 male and 1 female adult), at Fort Hall, Idaho, in population of 1,351.
1 Shawnee (male adult), at the Sauk and Fox agency, Okla., in population of 491.
2 Sioux (male adults), at the Devils Lake agency, N. Dak., in population of 1,013.
1 Sioux (male adult), at the Pine Ridge agency, S. Dak., in population of 6,690.
1 Sioux (female adult), at the Rosebud agency, S. Dak., in population of 4,977.
1 Sioux (male, 21 years old), at the Sisseton agency, S. Dak., in population of 1,874.
2 Sioux (female adults), at the Standing Rock agency, N. Dak., in population of 3,514.
1 Sauk and Fox (male adult), at the Sauk and Fox agency, Okla., in population of 581.
1 Tulalip (male adult), at the Tulalip agency, Wash., in population of 1,451.
1 Ute (male adult), at the Uinta agency, Utah, in population of 791.
1 Indian (male adult), at the Umatilla agency, Oreg., in population of 1,196.

Summary: There were reported in all, 48 cases of insanity of all forms, from 26 localities; no cases existed in 76 localities. Of the 48 cases, 33 were among males and 15 among females, which is in the proportion of 220 of the former to 100 of the latter. It is evident that insanity in the Indians predominates in the male sex, being more than twice as frequent as in the females. Among the whites, the female insane exceed the male in the proportion of 104 to 100. Of the 33 males, but one, and of the 15 females, only two, were young, all the rest, 94 per cent, being adults.[a] There is but one tribe in which the proportion of insane is large, namely, the Crows, where there is one insane to every 183 individuals of the population. The total Indian population reported upon amounting in round numbers to 125,000, the proportion of insane is 1 to 2,730 of population, or 0.38 per 1,000, against 1 to 552, or 1.81 per 1,000, among the whites.[b]

Epilepsy, all forms included, is somewhat more common among the Indians than insanity. The following cases were reported:

1 Apache (male adult), at the San Carlos agency, Ariz., in a population of 2,523.
1 Apache (female adult), at the Fort Apache agency, Ariz., in a population of 2,058.
1 Apache (male), at the Mescalero agency, N. Mex., in a population of 460.
1 Arapaho (male adult), at the Cantonment, Okla., in a population of 237.
2 Cherokee (1 male and 1 female adult), at the Eastern Cherokee school, N. C., in a population of 1,453.
3 Cheyenne (all female children), at the Cantonment, Okla., in a population of 528.
1 Cheyenne (male child), at the Seger school, Okla., in a population of 551.
3 Blackfeet or Sioux (1 male and 2 female adults), at the Cheyenne River agency, S. Dak., in a population of 2,477.
2 Chippewa (1 male and 1 female adult), at the Leech Lake agency, Minn., in a population of 3,387.

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[a] The 21-year-old Sioux are more properly counted with the adults than with the young.
[b] See the Report on the Insane, etc., *Eleventh Census*, 1890, 7, Washington, 1895.

2 Chippewa (1 male adult and 1 female child), at Mount Pleasant, Mich., in a population of 300.

2 Indians (1 male child and 1 female adult), at the Colville agency, Wash., in a population of 708.

1 Crow (male adult), at the Crow agency, Mont., in a population of 1,826.

2 Sioux (female children), at the Fort Peck agency, Mont., in a population of 1,651.

1 Indian (female adult), at the Fort Belknap agency, Mont., in a population of 1,234.

2 Indians (1 male child and 1 male adult), at the Fort Berthold agency, N. Dak., in a population of 1,210.

5 Indians (2 male children, 2 male adults, and 1 female adult), at the Flathead agency, Mont., in a population of 1,835.

1 Indian (male child), at the Genoa school, Nebr., in a population of 310.

2 Hopi (1 male and 1 female child), at the Hopi agency, Ariz., in a population of 1,878.

1 Hupa (male child), at the Hupa Valley agency, Cal., in a population of 414.

1 Kickapoo (male child), at the Potawatomi agency, Kans., in a population of 199.

1 Indian (female child), at the Klamath agency, Oreg., in a population of 1,164.

10 Menominee (3 male children, 1 male adult, 3 female children, and 3 female adults), at the Green Bay agency, Wis., in a population of 1,283.

1 Mission Indian (male child), at the Round Valley agency, Cal., in a population of 643.

1 Mohave (female child), at the Fort Mohave agency, Ariz., in a population of 892.

1 Omaha (male adult), at the Omaha agency, Nebr., in a population of 1,287.

1 Oto (male child), at the Oto agency, Okla., in a population of 364.

2 Osage (2 female adults), at the Osage agency, Okla., in a population of 1,895.

1 Paiute (female adult), at the Nevada agency, Nev., in a population of 494.

7 Piegan (1 male child, 3 male adults, 2 female children, and 1 female adult), at the Blackfeet agency, Mont., in a population of 2,059.

1 Pima (female child), at the Pima agency, Ariz., in a population of 6,600.

1 Quileute (male child), at the Neah Bay agency, Wash., in a population of 730.

2 Shoshoni (male children), at the Lemhi agency, Idaho, in a population of 470.

3 Shoshoni or Arapaho (1 male child and 2 male adults), at the Shoshoni agency, Wyo., in a population of 1,659.

3 Shoshoni or Bannock (1 female child and 2 female adults), at the Fort Hall agency, Idaho, in a population of 1,351.

1 Sioux (female child), at the Chamberlain school, S. Dak., in a population of 153.

1 Sioux (female adult), at the Devils Lake agency, N. Dak., in a population of 1,013.

4 Sioux (1 male child, 2 male adults, and 1 female adult), at the Lower Brulé agency, S. Dak., in a population of 470.

17 Sioux, Oglala (6 male children, 1 male adult, 8 female children, and 2 female adults), at the Pine Ridge agency, S. Dak., in a population of 6,690.

23 Sioux, mixed (4 male adults, 7 male children, 7 female children, and 5 female adults), at the Rosebud agency, S. Dak., in a population of 4,977.

4 Sioux (1 male child, 1 male adult, 1 female child, and 1 female adult), at the Sisseton agency, S. Dak., in a population of 1,874.

4 Sioux (male adults), at the Standing Rock agency, N. Dak., in a population of 3,514.

6 Sioux, Yankton (2 male and 4 female adults), at the Yankton agency, S. Dak., in a population of 1,702.

5 Sioux, Lower Yankton (4 male children and 1 female child), at the Crow Creek agency, S. Dak., in a population of 1,025.

2 Ute (male adults), at the Uinta agency, Utah, in a population of 790.

3 Walapai (1 male child, 1 female child, and 1 female adult), at the Truxton Canyon agency, Ariz., in a population of 514.

2 Indians (1 female child and 1 female adult), at the Warm Spring agency, Oreg., in a population of 786.

4 Winnebago (1 male child, 1 male adult, 1 female child, and 1 female adult), at the Omaha and Winnebago agency, Nebr., in population of 1,085.

In all, 146 cases, very probably all of grand mal in various degrees, in 47 localities. No cases were reported from 55, or a little more than half of the schools and reservations. The proportion of epileptics to the total Indian population would be 1.17 per thousand, which is quite near the mean proportion among whites. In central and southern Europe, according to Hirsch's summary,[a] an approximate estimate would put the average frequency of the disease at about 1 or 1.5 per 1,000 inhabitants. In France it ranges in the various departments from 0.5 to 3.4, and among Italian conscripts from 1.3 to 5.1 per thousand. The tribes most afflicted with the disease are:

	Epileptics per 1,000.
Lower Brulé Sioux	8.5
Menominee	7.8
Walapai	5.8
Cheyenne (Cantonment)	5.7
Lower Yankton Sioux	4.9
Sioux (Rosebud agency)	4.6
Winnebago	3.7
Yankton Sioux	3.5
Piegan	3.4
Flathead Agency Indians	2.7
Oglala Sioux	2.5
Shoshoni and Bannock	2.2
Sisseton Sioux	2.1

It is noticeable that half of the tribes where epilepsy is prevalent are branches of the Sioux and that 10 of the 13 tribes live in cold regions.

Among the 146 epileptics 76 were males and 70 females; that is, nearly equal proportions of the two sexes. As to age, 35 of the males were adults and 41 adolescents and children, while among the females 32 were adults and 38 young. It is evident that the disease develops in most cases during the period of growth.

Idiocy, all grades of feeble-mindedness included, is, it appears, widely distributed. The reported cases were as follows:

5 Apache (1 male child, 2 male adults, and 2 female children), at the Fort Apache agency, Ariz., in a population of 2,058.

3 Apache (all male children), at the Mescalero agency, N. Mex., in a population of 460.

1 Apache (male child), at the Jicarilla agency, N. Mex., in a population of 780.

2 Apache or Kiowa (1 male adult and 1 female child), at Fort Sill, Okla., in a population of 298.

3 Arapaho (2 female children and 1 female adult), at Cantonment, Okla., in a population of 237.

1 Cheyenne (male adult), at Cantonment, Okla., in a population of 528

1 Cheyenne (male child), at the Seger School, Okla., in a population of 551.

1 Indian (female child), at the Cheyenne and Arapaho agency, Okla., in a population of 1,297.

4 Indians (1 male and 3 female adults), at the Cheyenne River agency, S. Dak., in a population of 2,477.

1 Cœur d'Alène (male adult), at the Colville agency, Wash., in a population of 577.

3 Crows (2 male children and 1 female child), at the Crow agency, Mont., in a population of 1,826.

2 Indians (1 male and 1 female adult), at the Fort Peck agency, Mont., in a population of 1,651.

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[a] Handbook of Geographical and Historical Pathology, 537, III.

1 Indian (male child), at the Fort Belknap agency, Mont., in a population of 1,234.

2 Indians (1 male adult and 1 female child), at the Flathead agency, Mont., in a population of 1,835.

1 Indian (male child), at the Grande Ronde school, Oreg., in a population of 352.

8 Hopi (3 male children, 1 male adult, 3 female children, and 1 female adult), at the Hopi agency, N. Mex., in a population of 1,878.

2 Iroquois, Oneida (male adults), at the Oneida agency, Wis., in a population of 2,055.

11 Menominee (3 male children, 4 male adults, 3 female children, and 1 female adult), at the Green Bay agency, Wis., in a population of 1,283.

2 Navaho (male children), at the Navaho agency, N. Mex., in a population of 12,000.

1 Omaha (male adult), at the Omaha agency, Nebr., in a population of 1,287.

1 Osage (male adult), at the Osage agency, Okla., in a population of 1,895.

2 Paiute (1 male child and 1 female adult), at the Carson school, Nev., in a population of 494.

3 Piegan (1 male child, 1 male adult, and 1 female child), at the Blackfeet agency, Mont., in a population of 2,059.

4 Pima or Papago (1 male child, 1 male adult, 1 female child, and 1 female adult), at the Pima agency, Ariz., in a population of 6,600.

1 Potawatomi (male child), at the Sauk and Fox agency, Okla., in a population of 609.

1 Pueblo (male child), at the Santa Fé school, N. Mex., in a population of 225.

1 Pueblo (male adult), at the Santa Fé agency, N. Mex., in a population of 566.

4 Pueblos (1 male child, 1 female child, and 2 female adults), at the Santa Fé school, N. Mex., in a population of 924.

1 Quileute (male adult), at the Neah Bay agency, Wash., in a population of 730.

1 Shoshoni or Arapaho (male adult), at the Shoshoni agency, Wyo., in a population of 1,659.

1 Shoshoni (male child), at the Western Shoshoni agency, Nev., in a population of 509.

1 Sioux (male child), in the Lower Brulé agency, S. Dak., in a population of 470.

25 Sioux, Oglala (11 male children, 2 male adults, 11 female children, and 1 female adult), at the Pine Ridge agency, S. Dak., in a population of 6,690.

11 Sioux (5 male children, 3 male adults, and 3 female children), at the Rosebud agency, S. Dak., in a population of 4,977.

2 Sioux (1 male and 1 female child), at Sisseton agency, S. Dak., in a population of 1,874.

1 Sioux (male adult), at the Standing Rock agency, N. Dak., in a population of 3,514.

2 Sioux, Yankton (female children), at the Yankton agency, S. Dak., in a population of 1,602.

9 Ute (4 male children, 3 male adults, 1 female child, and 1 female adult), at the Uinta agency, Utah, in a population of 791.

1 Walapai (male child), at the Truxton Canyon agency, Ariz., in a population of 514.

5 Indians (2 male children, 1 male adult, and 2 female children), at the Warm Springs agency, Oreg., in a population of 786.

2 Yuma (1 male child and 1 male adult), at the Fort Yuma school, Cal., in a population of 650.

Greatest proportion of idiocy

	Per 1,000.		Per 1,000.
Arapaho (Oklahoma)	12.7	Pueblos (Santa Fé)	4.3
Ute (Uinta)	11.4	Sioux (Pine Ridge)	3.7
Menominee (Wisconsin)	8.6	Chippewa (Wisconsin)	2.9
Apache (Mescalero)	6.5	Apache (Fort Apache)	2.4
Warm Springs agency (Oregon)	6.4	Sioux (Rosebud)	2.2
Hopi	4.3		

The tables show, besides other facts, that there is some, but not a general, agreement between the proportion of idiocy and other neuropathic conditions in various tribes.

The total number of cases of idiocy of all grades reported is 134, which amounts to 1.07 per 1,000 population. Among the whites in the United States the proportion was, in 1890 (Eleventh Census), 1.55 per 1,000 population.

Of the 134 cases, 84, or more than three-fifths, were males; 50, or less than two-fifths, females, giving the proportion of 168 to 100. Among the whites enumerated by the Eleventh Census the proportion of male to female idiots was 118 to 100. Sixty per cent (51 individuals) of the male and 74 per cent (37 individuals) of the female idiots were children and adolescents. Many of the cases of idiocy under consideration are in all probability due to diseases and neglect in early childhood.

The *deaf and dumb* among the Indians are rather numerous. The reported cases were as follows:

1 Apache (male adult), at the Fort Apache agency, Ariz., in a population of 2,058.
1 Apache (male child), at the Jicarilla agency, N. Mex., in a population of 782.
1 Apache or Kiowa (male adult), at Fort Sill, Okla., in a population of 298.
4 Cheyenne (1 male child, 1 male adult, 1 female child, and 1 female adult), at Cantonment, Okla., in a population of 528.
1 Cheyenne (male child), at the Seger school, Okla., in a population of 551.
1 Indian (male adult), at the Cheyenne and Arapaho agency, Okla., in a population of 1,297.
2 Indians (male adults), at the Cheyenne River agency, S. Dak., in a population of 1,477
1 Chippewa (female adult), at the Leech Lake agency, Minn., in a population of 3,387.
4 Cœur d'Alènes (2 male and 2 female adults), at the Colville agency, Wash., in a population of 577.
5 Crows (2 male children, 2 male adults, and 1 female child), at the Crow agency, Mont., in a population of 1,826
2 Indians (1 male and 1 female adult), at the Fort Peck agency, Mont., in a population of 1,651.
2 Indians (1 female child and 1 female adult), at the Fort Belknap agency, Mont., in a population of 1,234.
6 Indians (5 male adults and 1 female child), at the Flathead agency, Mont., in a population of 1,835.
1 Indian (male child), at the Fort Shaw Industrial School, Mont., in a population of 315.
1 Hopi (female child), at the Hopi agency, N. Mex., in a population of 1,878.
1 Iroquois, Oneida (male child), at the Oneida agency, in a population of 2,055.
1 Indian (male child), at the Kiowa agency, Okla., in a population of 3,675.
1 Kiowa (female child), at the Rainy Mountain school, Okla., in a population of 102.
2 Menominee (1 male and 1 female adult), at the Green Bay agency, Wis., in a population of 1,283.
1 Mission Indian (male child), at Round Valley, Cal., in a population of 643.
2 Navaho (1 male and 1 female adult), at the Navaho agency, N. Mex., in a population of 12,000.
1 Nez Percé (female child), from Idaho, in a population of 1,578.
3 Omaha (1 male child, 1 male adult, and 1 female adult), at the Omaha agency, Nebr., in a population of 1,287.
2 Oto (1 male child and 1 female adult), at the Oto agency, Okla., in a population of 364.
1 Osage (male), at the Osage agency, Okla., in a population of 1,895.

3 Piegan (2 male adults and 1 female child), at the Blackfeet agency, Mont., in a population of 2,059.

1 Pueblo (male child), at the Santa Fé agency, N. Mex., in a population of 566.

2 Shoshoni or Arapaho (1 male child and 1 male adult), at the Shoshoni agency, Wyo., in a population of 1,659.

1 Sioux (male child), at the Devils Lake agency, N. Dak., in a population of 1,013.

1 Sioux (female child), at the Lower Brulé agency, S. Dak., in a population of 570.

25 Sioux, Oglala (15 male children, 4 male adults, 5 female children, and 1 female adult), at the Pine Ridge agency, S. Dak., in a population of 6,690.

13 Sioux, mixed (3 male children, 5 male adults, 4 female children, and 1 female adult), at the Rosebud agency, S. Dak., in a population of 4,977.

7 Sioux (1 male child, 2 male adults, 2 female children, and 2 female adults), at the Standing Rock agency, N. Dak., in a population of 3,514.

4 Sioux, Yankton (1 male adult, 2 female children, and 1 female adult), at the Yankton agency, S. Dak., in a population of 1,702.

3 Sioux, Lower Yankton (1 male child and 2 male adults), at the Crow Creek agency, S. Dak., in a population of 1,025.

2 Ute (1 male and 1 female child), at the Uinta agency, Utah, in a population of 791.

1 Ute (male child), at the Southern Ute agency, Colo., in a population of 403.

1 Indian (male adult), at the Umatilla agency, Oreg., in a population of 1,196.

1 Walapai (female adult), at the Truxton Canyon agency, Ariz., in a population of 514.

The above reports embrace 113 cases in 39 localities; in 63, or three-fifths, of the schools and reservations deaf and dumb were not found. The proportion of deaf and dumb per thousand population is 0.87 in the Indians, against 0.68 in the United States whites.[a] The excess in the Indians is very probably chargeable to neglect and improper treatment of diseases of the organs of hearing, and not to a greater proportion of deaf and dumb born. The influence of climate and heredity is suggested by the facts that nearly all the tribes in which the condition predominates live in cold regions, and that the majority of these belong to one people—the Sioux.

	Deaf and dumb per 1,000.		Deaf and dumb per 1,000.
Cheyenne (Oklahoma)	7.6	Sioux (Rosebud agency)	2.6
Cœur d'Alènes	6.9	Sioux (Yankton)	2.3
Sioux (Oglala)	3.7	Omaha	2.3
Flathead Agency Indians (Montana)	3.2	Sioux (Standing Rock, N. Dak.)	1.9
Sioux (Lower Yankton)	2.9	Piegan	1.5
Crows (Montana)	2.7		

Among the total 113 cases 74, or 65.5 per cent, were males, and 39, or 34.5 per cent, were females, which gives the proportion of 190 to 100. Among the whites, according to the data of the Eleventh Census, the proportion of male to female deaf and dumb was only as 116 to 100. The cause of this marked discrepancy between the two races is not apparent.

As to age, among the males 38, or a little more than half, among the females 10, or one-fourth, were adults, the remainder being adolescents and children.

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[a] Report on the Insane, *Eleventh Census*, 1890, Washington, 1895.

Spinal curvatures: Under this heading are included curvatures of every variety without distinction as to the cause. It is safe to say that a large majority of the cases are due to tuberculous disease, and some are the result of injury. The following cases of spinal curvature were reported:

1 Apache (male), at the Rice station, Ariz., in a population of 210.
1 Cheyenne (female), at the Seger school, Okla., in a population of 551.
1 Indian (female), at the Cheyenne and Arapaho agency, Okla., in a population of 1,297.
2 Cœur d'Alènes (female), at the Colville agency, Wash., in a population of 577.
1 Indian (female), at the Colville agency, Wash., in a population of 708.
7 Crows (5 males and 2 females), at the Crow agency, Mont., in a population of 1,826.
3 Indians (2 males and 1 female), at the Fort Peck agency, Mont., in a population of 1,659.
1 Indian (male), at the Fort Belknap agency, Mont., in a population of 1,234.
1 Indian (male), at the Genoa school, Nebr., in a population of 310.
1 Indian (male), at the Hayward training school, Wash., in a population of ——.
5 Hopi (3 males and 2 females), at the Hopi agency, N. Mex., in a population of 1,878.
2 Iroquois, Oneida (1 male and 1 female), at the Oneida agency, Wis., in a population of 2,055.
1 Indian (female), at the Kiowa agency, Okla., in a population of 3,675.
3 Menominee (all males), at the Green Bay agency, Wis., in a population of 1,283.
10 Nez Percés (4 males and 6 females), from Idaho, in a population of 1,578.
1 Paiute (male), at the Carson school, Nev., in a population of 494.
1 Piegan (female), at the Blackfeet agency, Mont., in a population of 2,059.
3 Pima (1 male and 2 females), at the Pima agency, Ariz., in a population of 6,600.
1 Pueblo (male), at the Laguna agency, N. Mex., in a population of 2,102.
1 Pueblo or Navaho (male), at the San Juan agency, N. Mex., in a population of 7,000.
2 Pueblos, mixed (1 male and 1 female), at the Santa Fé school, N. Mex., in a population of 924.
1 Shoshoni (female), at the Lemhi agency, Idaho, in a population of 470.
2 Shoshoni or Arapaho (1 male and 1 female), at the Shoshoni agency, Wyo., in a population of 1,659.
1 Shoshoni (male), at the Western Shoshone agency, Nev., in a population of 509.
3 Sioux (all males), at the Chamberlain school, S. Dak., in a population of 153.
1 Sioux (female), at the Indian school, Pierre, S. Dak., in a population of 150.
5 Sioux (2 males and 3 females), at the Lower Brulé agency, S. Dak., in a population of 470.
14 Sioux, Oglala (4 males and 10 females), at the Pine Ridge agency, S. Dak., in a population of 6,690.
3 Sioux, mixed (2 males and 1 female), at the Rosebud agency, S. Dak., in a population of 4,977.
2 Sioux (males), at the Yankton agency, S. Dak., in a population of 1,702.
3 Sioux (all females), at the Crow Creek agency, S. Dak., in a population of 1,025.
2 Indians (1 male and 1 female), at the Umatilla agency, Oreg., in a population of 1,196.
2 Walapai (1 male and 1 female), at the Truxton Canyon agency, Ariz., in a population of 614.
7 Indians (4 males and 3 females), at the Warm Springs agency, Oreg., in a population of 786.
1 Zuñi (female), at the Zuñi agency, N. Mex., in a population of 1,521.

The total number of cases amounts to 96, from 35 localities. No cases of spinal curvature were reported from 66, or very nearly two-thirds of the schools and agencies. The number of Indian population to which the 101 reports apply being in round numbers 113,000, the proportion of the individuals with spinal curvatures per 1,000 population is 0.85.[a] There were found no suitable data on the whites that could be utilized for comparison, but there is no doubt that the proportion of cases of deformities of this nature in the Caucasian race is larger.

As to the nature of the curvatures, kyphosis seems to be the most frequent, then comes scoliosis, and then lordosis.

As to the sex, 48, or exactly the half of the 96 cases, were males and 48 females.

The tribes in which the deformities were most frequent were as follows:

Spinal curvatures

	Per 1,000.		Per 1,000.
Sioux (Chamberlain)	19.6	Sioux (Crow Creek agency)	2.9
Sioux (Lower Brulé)	10.6	Hopi	2.7
Warm Springs Agency Indians, Oregon	8.9	Menominee	2.3
Nez Percés	6.3	Sioux (Oglala)	2.1
Crows	3.8	Fort Peck agency, Mont	1.8

If the data on tuberculosis be referred to, it will be seen that there is much correspondence between the prevalence of that condition and the frequency of spinal curvatures, pointing to the tubercular origin of the latter. The simple character of all of the curvatures whose nature was specified (see detail table in Appendix), speaks also more for tuberculous than for rachitic origin of deformities of this kind.

Tuberculosis.—Separate reports were called for on pulmonary tuberculosis, on that of bones and joints, and on the glandular form, or scrofula. It is with these diseases that physicians reporting encountered most difficulty, owing to the size and scattered population of some of the reservations, and to uncertainty regarding cases in the early stage. On this account a number of answers given were merely estimates, which did not accord with the mortality among the same people, and had to be excluded. Even the remaining data, moreover, should be taken as less accurate than those on other morbid conditions. The following columns give the various agencies and schools arranged according to the prevalence of pulmonary tuberculosis. It is noticeable that among the localities with the highest proportion of the disease are several schools; this is due to some extent to the small population of these places, in which every case means a considerable proportion of the whole, but also to other reasons.

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[a] Two reports, one on the La Pointe Agency Chippewa and the other from the Navaho agency, both referring to a larger number of cases, had to be excluded pending further inquiry.

Frequency of tuberculosis

Designation.	Agency or school.	Tuberculosis (per 1,000).		
		Pulmonary.	Bones and joints.	Glandular.
Paiute	Fort Bidwell school, Cal	68.9	17.2	103.4
Osage	Osage Agency school, Okla	68.2		30.3
Hupa	Hupa Valley agency, Cal	60.4	24.2	193.2
Menominee	Green Bay agency, Wis	58.4	1.6	32.7
Indians	Grand Junction school, Colo	47.1	9.4	84.9
Quinaielt	Puyallup agency, Wash	36.2		14.5
Cheyenne	Seger school, Okla	34.5	5.4	38.1
Sioux (Oglala)	Pine Ridge agency, S. Dak	30.8	6.8	57.7
Chippewa	Mount Pleasant school, Mich	30.0		(?)
Sioux	Lower Brulé agency, S. Dak	29.8	4.2	42.5
Sioux (mixed)	Rosebud agency, S. Dak	29.7		26.1
Mohave	Colorado River agency, Ariz	29.5		11.8
Sioux (Lower Yankton)	Crow Creek agency, S. Dak	26.3	.9	34.1
Ute	Uinta agency, Utah	25.3	6.3	37.9
Indians	Fort Peck agency, Mont	24.2	4.2	15.7
Oto	Oto agency, Okla	21.9		2.8
Sioux (Yankton)	Yankton agency, S. Dak	21.7	2.3	5.8
Cheyenne	Cantonment, Okla	18.9	5.4	38.1
do	Tongue River agency, Mont	17.0		
Paiute	Nevada agency, Nev	16.3	3.2	8.1
Apache	Mescalero agency, N. Mex	15.2	4.3	8.7
Iroquois (Oneida)	Tomah school, Wis	13.3		80.0
Crows	Crow agency, Mont	13.1	.5	18.6
Potawatomi	Sauk and Fox agency, Okla	13.1		
Hopi	Hopi agency, N. Mex	12.7	13.8	9.1
Indians	Shawnee agency, Okla	12.6		
Ute	Fort Lewis school, Colo	11.2	5.6	
Walapai	Truxon Canyon agency, Ariz	9.7	5.8	31.1
Sauk and Foxes	Sauk and Fox agency, Okla	8.6		
Arapaho	Cantonment, Okla	8.4	16.9	29.5
Pawnee	Pawnee agency, Okla	8.2	1.6	14.8
Sioux	Devils Lake agency, N. Dak	7.9	1.9	42.4
Shoshoni	Western Shoshoni, Nev	7.8	9.8	17.6
Indians	Umatilla agency, Oreg	7.5	.8	37.6
Shoshoni and Bannock	Fort Hall, Idaho	7.4	3.7	8.1
Chippewa	Vermilion Lake school, Wis	7.4		6.2
Quileute	Neah Bay agency, Wash	6.9		1.3
Sioux	Indian school, Pierre, S. Dak	6.7		166.7
Pima	Pima agency, Ariz	6.5	1.1	12.7
Mission Indians	Round Valley, Cal	6.2	3.1	4.6
Indians	Grande Ronde school, Oreg	5.7		8.5
Winnebago	Omaha and Winnebago agency, Nebr	5.5	1.8	5.5
Kickapoo	Potawatomi and Nemaha agency, Kans	5.0	5.0	10.1
Indians	Flathead agency, Mont	4.9	2.7	4.9
Piegan	Blackfeet agency, Mont	4.8	2.9	8.3
Sioux	Standing Rock agency, N. Dak	4.5	2.0	22.7
Shoshoni	Lemhi agency, Idaho	4.3	6.4	
Indians	Colville agency, Wash	4.2	5.9	32.5
Pueblos	Sante Fé school, N. Mex	4.0		
Indians	Cheyenne and Arapaho agency, Okla	3.9	2.3	12.3
Cœur d'Alènes	Colville agency, Wash	3.5	1.7	13.8
Apache	Fort Apache agency, Ariz	3.4	.5	3.9

Frequency of tuberculosis—Continued

Designation.	Agency or school.	Tuberculosis (per 1,000). Pulmonary.	Bones and joints.	Glandular.
Shawnee	Sauk and Fox agency, Okla	3.4	1.7	
Yuma	Fort Yuma school and reservation, Cal	3.1	1.5	
Chippewa	Leech Lake agency, Minn	2.9		7.4
Indians	Klamath agency, Oreg	2.6		2.6
do	Fort Berthold agency, N. Dak	2.5	.8	4.1
do	Fort Belknap agency, Mont	2.4	3.2	8.1
Ute	Southern Ute agency, Colo	2.4		
Omaha	Omaha agency, Nebr	2.3	2.3	16.3
Mohave	Fort Mohave agency, Ariz	2.2	1.1	6.7
Paiute	Carson school, Nev	2.0	2.4	4.0
Iroquois (Oneida)	Oneida agency, Wis	1.4	.5	7.3
Cherokee	Eastern Cherokee school, N. C	1.4		
Apache	Jicarilla agency, N. Mex	1.3		1.3
Indians	Haskell Institute, Lawrence, Kans	1.3		2.6
do	Pecane school, Ind. T	1.2		
Shoshoni and Arapaho	Shoshoni agency, Wyo	1.2		.6
Navaho	Navaho agency, N. Mex	.9	.6	.2
Pueblos and Navaho	San Juan agency, N. Mex	.6		.1

There were in all 91 acceptable reports on tubercular diseases, applying to 107,000 Indian population. They gave 2,836 cases of the disease, of which 1,038 were of the pulmonary, 208 of the bone and joint, and 1,590 of the glandular variety. The given relation was 100 of pulmonary tuberculosis to 20 of that of bones and joints and 153 of glands.

The proportion of the several forms of the diseases to the population was as follows:

	Cases per 1,000.
Pulmonary tuberculosis	9.7
Tuberculosis of bones and joints	1.95
Glandular tuberculosis	15.0

The writer searched in vain for suitable statistics with which the above could be compared. There are many and extensive data as to the mortality from tuberculous diseases, but not as to the morbidity. Deaths from phthisis among the whites of the United States vary according to localities from 1.5 to 5.5 and in Europe from 2 to 9 per thousand of population, or 1 in 5 to 1 in 7 of all deaths; but these figures give no accurate clew as to the distribution of the disease among the living. In all probability the proportion of the several main varieties of tuberculosis is not much if any larger among the Indians as a whole than it is among the poorer classes of white people, particularly those of industrial centers, as a whole. There are, however, great differences among the tribes. In some the disease is decidedly rare, while in other tribes its proportions are appalling.

Among the large tribes the greatest sufferers are the Sioux, the least the Navaho. The geographical distribution of the disease is somewhat irregular; nevertheless the most involved are the northwestern and northern regions, west of the lakes—hence the humid and cold parts of the country, with the consequences of much indoor life, and greater chance of exposure and infection.

The frequency of other forms of tuberculosis corresponds for the most part to that of the lungs, but there are numerous exceptions to the rule.

All forms of the disease predominated somewhat in the males, as shown below:

Tuberculosis.	Females.	Males.
Pulmonary	100	110
Bones and joints	100	124
Glandular	100	111

As the ratio of males to females in the total mainland Indian population is at present as 101.5 to 100, it seems that there is actually a slightly greater predisposition to tuberculous diseases among the male than among the female Indians. It is well known that phthisis, at least, is also somewhat more common in the male sex among white people.

As to age, pulmonary consumption predominates in the adults in the proportion of nearly 3 to 2, but of both the other forms there are more cases in the young.

Tuberculosis.	Adults.	Children and adolescents.
Pulmonary	100	67
Bones and joints	100	126
Glandular	100	[a] 248

[a] The more proper way would be, of course, to compare each group of cases with the number of individuals in the population of that particular age division.

The relation of tuberculosis to other morbid conditions can not well be studied from general statistics.

As to the prevalence of morbidity in general, it was seen that many of the northern and some northwestern tribes, as the Sioux, Menominee, etc., showed a larger percentage of most of the pathological conditions inquired into than the tribes in other parts of the country. The conclusion seems fully justified that the northern regions, including especially parts of Wisconsin, the Dakotas, and Montana are at present, whatever the direct causes may be, the most unfavorable to the health of the Indian.

PHYSICIANS' NOTES

ALBINISM

CHEYENNE AND ARAPAHO

During sixteen years residence among the Cheyenne and Arapaho Indians I have never met with a case of albinism.

We have an Indian on the reservation by the name of White Buffalo, which appellation was derived from the color of his hair, it being of an iron gray from his boyhood. In all other respects he conforms to the normal type of his race. He is the nearest approach to a partial albino among these Indians.

Dr. GEO. R. WESTFALL.

PAWNEE

Since my first connection with the tribe, in 1889, I have not seen nor heard of a case of albinism.

Dr. G. H. PHILLIPS.

GOITER AND CRETINISM

CHEYENNE AND ARAPAHO

Have never seen a case of goiter or cretinism among the Indians.

Dr. GEO. R. WESTFALL.

FORT BERTHOLD (ARIKARA, GROSVENTRES, MANDAN)

Fully a fourth of these women have goiter in various stages, from a slight fullness to an immense size. Of their histories I know nothing, except in such cases as have come under my care; these only have I reported.

MARY H. MCKEE.

PIEGAN

Some years ago there was under my care here a well-marked case of cretinism which died.

Dr. GEO. S. MARTIN.

INSANITY

CHEYENNE AND ARAPAHO

There is no insane among these Indians to-day. Some years ago there was an Indian among the Cheyenne who was insane. He was possessed with the delusion that he was a civil engineer and went by the name of Surveyor. A party of surveyors locating the route of some railroad, in passing through the country, attracted his attention, and from that time, so the Indians say, his insanity dated. He could be seen at most any hour of the day walking across the prairies dragging a long rope, in lieu of a chain, and every now and then he would stop, pull up on the rope, and pretend to read off some figures; then he would proceed just like a lineman dragging a chain.

Dr. GEO. R. WESTFALL.

FORT HALL (BANNOCK AND SHOSHONI)

One male, 35 years, dementia precox, now in Idaho State Insane Asylum, Blackfoot, Idaho, awaiting transfer to Canton, S. Dak.; one female, 40 years, dementia, gradually improving.

Dr. F. H. POOLE.

PAWNEE

No case known to have occurred in the tribe within sixteen years.

Dr. G. H. PHILLIPS.

PIEGAN

One male, 46 years old; in 1894, while a policeman, after being exposed to long cold, became violently insane, showing homicidal tendency, which condition gradually gave place to settled melancholia, with almost total loss of mind.

Two males, 38 years old. "Weak-minded," always showing some symptoms of the cretin; at present harmless melancholia agitata.

Dr. GEO. S. MARTIN.

PIMA

(1) An adult male about 55 years old; melancholia, followed by violence; taken to the insane asylum for Indians October, 1903; reported as improved.

(2) An adult male about 22 years old; dementia, with occasional violence; was taken recently to the asylum for the insane at Phoenix, Ariz.

(3) An adult male about 25 years old; occasional attacks of mania; is at his home.

(4) An adult male about 45 years old; religious melancholy, with attempted violence on himself; was in the insane asylum at Phoenix four years ago for several months; he was sent home much improved, and is now in fair health, mentally and physically.

Cases 1, 2, and 4 are Indians who were never in school; case 3 a man well educated for an Indian.

Dr. A. E. MARDEN.

SAUK AND FOX AGENCY

The male Indian designated in the report as insane did not come under my personal observation. Some two years ago he was arrested and convicted for horse stealing, was confined in the penitentiary, and while there became insane. He is now in an asylum in New York.

Dr. F. H. WYMAN.

EPILEPSY

CHEYENNE AND ARAPAHO

Before the segregation of the Indians of this reservation there was a girl at Cantonment afflicted with grand mal, but, if my memory serves me right, she is dead.

Dr. GEO. R. WESTFALL.

FORT HALL (BANNOCK AND SHOSHONI)

One female, 40 years; several years' duration; grand mal.

One female, 19 years; two years' duration; grand mal.

One female, 12 years; recently developed; probably associated with pubescence; grand mal.

Dr. F. H. POOLE.

HUPA

Since the report was made the child having epilepsy has died. It died in an epileptic seizure which lasted more than twenty-four hours.

Dr. J. S. LINDLEY.

PAWNEE

No case learned of within sixteen years.

Dr. G. H. PHILLIPS.

IDIOCY (ALL GRADES)

CHEYENNE AND ARAPAHO

The patient reported as idiotic is a Cheyenne girl about 10 years of age. She is also deformed or paralyzed on one side.

Dr. Geo. R. Westfall.

PAWNEE

Never knew or learned of a case within sixteen years.

Dr. G. H. Phillips.

DEAF AND DUMB

CHEYENNE AND ARAPAHO

The mute is a Cheyenne youth who speaks the sign language fluently. He is bright and well developed, alert and active.

Dr. Geo. R. Westfall.

PAWNEE

No case ever heard of. With the tribe since 1889.

Dr. G. H. Phillips.

MONSTROSITIES

CHEYENNE AND ARAPAHO

I have never met with a case of monstrosity during my long residence at this agency. Doubtless they do occur, but unless they gave rise to some dystocia my attention would not be called to the case. Indians are very peculiar in this respect and seldom or never call a physician unless some difficulty arises. If an Indian woman was to give birth to a monster, it would undoubtedly be allowed to perish and the case would never be made public.

Dr. Geo. R. Westfall.

FORT HALL (BANNOCK AND SHOSHONI)

I am told that the Indians in their precivilized state were wont to destroy the congenitally deformed as a measure best compatible with the very nature of their existence.

Dr. F. H. Poole.

ONEIDA (WISCONSIN)

One male, age 35, congenital. Limbs of lower extremities folded crosswise as in fetus in utero. Joints ankylosed, limbs atrophied.

One male, age 25, congenital. Lacks muscular development and control of limbs. Dull and stupid and unable to articulate words. Senses normal.

One female, age 12, congenital. Limb diminished in size. Never in school, but quite intelligent.

Dr. J. Powlas.

PAWNEE

No case ever heard of. With the people since 1889.

Dr. G. H. Phillips.

PIEGAN

The case of monstrosity is a male child 8 years old, born with only rudimentary fingers on both hands.

Dr. Geo. S. Martin.

ZUÑI

One case of double harelip and cleft palate in a boy of 12 years.

Dr. E. J. Davis.

SPINAL CURVATURES

CHEYENNE AND ARAPAHO

The hunchback subject is a girl, among the Cheyenne; I should judge to be about 16 or 18 years of age. The kyphosis is marked, but notwithstanding the deformity she apparently enjoys a very fair degree of health.

Dr. Geo. R. Westfall.

NAVAHO

In making report "Diseases, etc., in relation to education and civilization," under date of October 1, 1904, I reported 25 cases of spinal curvature—20 males and 5 females. In reviewing the subject I find I overlooked 2 cases—1 male and 1 female—so I am able to report 27 cases posterior curvature, all full-bloods, and all caused by caries of dorsal vertebræ, varying only in degree.

I append the names and ages of the 27 cases I report:

Name.	Approximate age.	Name.	Approximate age.
MALES.		MALES—continued.	
Hosteen Tolbai	40	Hosteen Altsissy	60
Tode Cheny	25	Nez Ahn	13
Sinna Giney	25	Ahl Hoshe	20
Hostine Yazza	20	Hosteen Been Gahne	60
Percy Haven	20	Beno Yazhe	35
Biajo Bia	18	Ben Catron	16
Jack Hurd	25	FEMALES.	
Whane	40	Garnet	50
Suhya	40	Cho a ye na	50
Net Manning	15	Tel e chee	70
Hosten Nez	25	Cocoaninne	80
Naljeen	40	Ah zan tel o he	65
Gosh Joe	17	Zan chol geney	50
Natane	20		
Atclohe	55		

Dr. Chas. J. Logan.

This report was not included into the general statistics, pending further inquiry.

ONEIDA (WISCONSIN)

One male, aged 60, backward curvature; no cause ascertained.

One female, aged 18, backward and lateral; probably a fall when young. Fairly intelligent.

Dr. J. Powlas.

ZUÑI

We have one case of kyphosis in an adult female, the result of Pott's disease.

Dr. E. J. Davis.

TUBERCULOSIS

APACHE (WHITE MOUNTAIN)

The figures relative to pulmonary tuberculosis are subject to change. In six months all cases cited here may have passed away and a new series, more or less, have taken their places. Only definite cases are set forth in the report and incipient or cases of predisposition avoided. In the past two months two cases that suffered with glandular tuberculosis for many years became infected in the lungs and died. Others in robust health become infected and perish as rapidly.

Hemorrhage is rare in Indians and secondary infection, by the germs causing pus, rapidly follows invasion by the tubercular bacilli.

Dr. A. M. Wigglesworth.

APACHE (WHITE MOUNTAIN)

Children whose lives have been spent practically out of doors from birth to the day they enter school find on entering school a strange and uneasy condition, which sometimes causes temporary ailment. I have ordered that Apache children in school receive, in addition to good, wholesome, well-cooked food, the purest air that they may remain healthy; the sleeping rooms must be open and cool. One of the means of checking tuberculosis in the school is to subject the children before being received in school to a careful examination by the physician and accept only the healthy.

From a special report of C. W. Crouse, agent.

CARLISLE INDIAN SCHOOL

The only case of tuberculosis is that of glandular form in a female adult Chippewa.

CHEYENNE AND ARAPAHO

The patients reported are of the following ages:

No. of case.	Form of tuberculosis.	Age of male.	Age of female.
1	Pulmonary	28	....
2	.....do	30	....
3	.....do	34	....
4	.....do	36	....
5	.....do	....	28
1	Glandular	7	....
2	.....do	8	....
3	.....do	13	....
4	.....do	....	6
5, 6	.....do	....	7
7	.....do	....	8
8, 9	.....do	....	9
10, 11	.....do	....	10
11, 12	.....do	....	12
13	.....do	....	17
14, 15	.....do	....	18
1	Bones and joints	10	....
2	.....do	....	40

Tuberculosis is met with among these people in all its varied manifestations. It can not be said that the disease is on the increase among the Cheyenne and Arapaho Indians, but until they learn to observe more carefully the laws of hygiene, any marked diminution of the disease among them can not be hoped for.

Dr. Geo. R. Westfall.

CROWS

One of the greatest drawbacks in dealing with tuberculosis among these Indians is the lack of nourishing food, such as milk, eggs, and butter. Very few keep cows or chickens, and it is impossible for the majority of them to obtain either milk, eggs, or butter.

There are 59 cases of tuberculosis given on the blank. There are probably others on the reservation in their incipiency. This number equals a little more than 3 per cent of the total population. Of the 13 males given on the blank as suffering from pulmonary tuberculosis, but 1 has ever been in school. This was a boy 6 years old, who was admitted and released at once upon thorough examination, so that in reality his school life could have no influence one way or the other.

Of the 11 females, but 3 have ever been in school. One of these, a girl 13 years of age, developed the disease early last spring. She was under treatment last summer and is now again in school, having gained 10 pounds since September 1 and is now the picture of health. The second of the females, who has been in school, is a girl of 13. She contracted the disease from her father and mother, who were both consumptives, while she was at home on her vacation some fourteen months ago. She improved at first, but after getting from the physician's direct control grew gradually worse, and at the present time is in a precarious condition and no doubt will soon pass away. Her mother died six months ago from pulmonary tuberculosis. The third one is a married woman and is 18 years of age. She contracted consumption while home from school in attendance upon her father, who died from the disease. She is now under treatment and is very much improved, but in all probability will succumb to the disease within a year.

Of the 18 males suffering from glandular tuberculosis, 14 have been in school, but nearly all were affected with the disease before entering. Twelve of the females with the glandular form have also been in school at various times, but nearly all had enlarged glands before entering.

A marked loss of weight in an Indian invariably indicates the invasion of the tubercular bacilli.

Dr. W. Q. G. Tucker.

FORT HALL (BANNOCK AND SHOSHONI)

Tuberculosis, pulmonary:
- 1 male, 20 years; cough, hectic fever.
- 1 male, 22 years; cough, fever, and sweat.
- 1 male, 28 years; cough, fever, emaciation.
- 1 male, 30 years; cough, hemoptysis, also laryngeal symptoms.
- 1 female, 18 years; fever, hemoptysis.
- 1 female, 20 years; fever, emaciation.
- 1 female, 24 years; fever and hemoptysis.
- 1 female, 26 years; fever.
- 1 female, 30 years; fever.
- 1 female, 33 years; fever.

Tuberculosis, bones and joints:
- 1 male, 14 years; tuberculosis of the hip joint.
- 1 female, 12 years; tubercular arthritis both elbow joints and lupus vulgaris both hands.
- 1 female, 5 years; tubercular spondylitis.
- 1 male, 50 years; kyphotic spine due to tubercular spondylitis during childhood.

Tuberculosis, glandular (cervical glands in all):
- Males—ages: 8, 9, 9, 10, 25, 34.
- Females—ages: 7, 9, 9, 10, 12.

The physical examination of the children prior to their admission into the Fort Hall Training School for the present term shows a large percentage affected with enlarged tubercular lymphatic glands, not, however, in a suppurating condition. Many show chronic enlargement of one or both tonsils.

Dr. F. H. Poole.

HUPA

The report of the various forms, or rather the three forms of tuberculosis, is based upon a personal knowledge gained by having cases under my care, and having been in the various families of the reservation. There is no doubt, however, that if a full and searching investigation was made the number of cases of the glandular variety would be increased by at least 25 per cent and each of the other two varieties 10 per cent. Those afflicted with the pulmonary variety are constantly dying, while those attacked with the glandular and bones and joints continue to accumulate; it very rarely happens that a death comes from either of them.

Dr. J. S. Lindley.

MOHAVE (COLORADO RIVER AGENCY)

Pulmonary tuberculosis:	
Males (4 adults and 4 children)	8
Females (6 adults and 1 child)	7

Of the 15, 5 (3 male, 2 female) are students, 7 (3 male, 4 female) are former students, and 3 (2 male, 1 female) have never been in school.

Glandular tuberculosis:	
Males (adult, student)	1
Females (all children, 4 at school, 1 former student)	5

Dr. T. R. White.

NESPELIM

I would state that the Indians here are greatly afflicted with lymphatic tuberculosis. I have only reported the cases now under treatment, but I think 25 per cent of the entire population are infected to a greater or less extent. Frequently these scrofulous persons on catching cold will rapidly drift into pulmonary tuberculosis. I must say that these people are very free from venereal diseases; only occasionally am I called to treat gonorrhea, and during all the years of my association with them I have not known of one true case of syphilis.

Dr. Edward H. Latham.

NEZ PERCÉS

The report obtained was apparently an estimate and had to be excluded pending further inquiry.

PAWNEES

My observation is that pulmonary tuberculosis has greatly increased among the Pawnees as they have advanced in civilization. I do not think this increase in tubercular disease is due to civilization as much as to the lack of attention to the laws of health. The climate is milder here than that of their former Nebraska home; but they do not take the usual and necessary precautions against the changes and vicissitudes of climate. Then, again, their income is such that they have no inducement to work. Therefore they do not get the physical exercise necessary for a vigorous body. (Connected with the Pawnees since 1889.)

Dr. G. H. Phillips.

PIEGAN

There are certainly many other cases of tuberculosis in its early stages among these people, but I have reported on this blank only those cases in which I have made a sure diagnosis existing at the present time.

Dr. Geo. S. Martin.

MISCELLANEOUS

From three of the agencies, the Nez Percé in Idaho, La Pointe in Wisconsin, and that of the Sisseton Sioux, only estimates of tuberculous cases were given, and these apparently included possible incipient cases as well as the developed cases of the disease. The data were not accurate enough to be included with the others, but there can be no doubt of the prevalence in these localities of the disease in its various forms. The matter is under further investigation.

XII. INDIAN CONCEPTION OF DISEASE, ITS PREVENTION AND TREATMENT; FOLK MEDICINE AND MEDICINE-MEN

Although Indian views concerning disease and Indian methods and means of treatment are really subjects of ethnological rather than of medical interest, they deserve attention here as they bear an important relation to the morbidity and mortality of the people. These views and methods are not uniform among the tribes, or even within the larger individual tribes; nevertheless they present throughout a homogeneous basis and admit of treatment in common.

For the greater part the Indian conceptions of disease differ radically from those of modern civilized and educated man, but they are closely related to those of other peoples, including whites, in similar stages of social development.

Of his own initiative the southwestern Indian north of central Mexico has never approached scientific study and explanation of disease or scientific methods of treatment. He has observed keenly, but has not reached the stage of systematic, critical investigation. His knowledge consists of memories of experiences and of traditional interpretations of experiences. His mind being untutored, these memories are often imperfect and the interpretations biased and erroneous. His reasoning is largely confined to simple or apparent analogies which are not usually sufficient for correct determinations, and is much influenced by traditional views, religion, and unbridled fantasy. One of the chief results of such reasoning with the Indian, as with other primitive men, is that every object, organic or inorganic, may exert, it is believed, in a greater or less degree mysterious power for good or evil on every other object, and his conception of sickness is largely based on this notion.

From all that the writer could learn on this very complex subject the more general ideas of disease and its etiology among many of the southwestern Indians are as follows: Illness is a deleterious spell which induces bodily suffering, is generally inimical to physical welfare, and may even bring an untimely death. These manifestations excite the closest attention of those affected and their friends and a strong desire to learn the causes. The Indian, who is not devoid of common sense, knows that certain natural conditions, such as extremes of cold and heat, are capable of affecting him adversely, and that men, animals, plants, and other objects may harm him. Ailments thus caused are observed to be accompanied by various symptoms, as pain, debility, loss of appetite, fever, etc. These occurrences, if no complications arise, are viewed quite rationally; but similar symptoms arise at other times without their cause having been observed. They may develop suddenly or during a night or they may approach gradually, but their origin remains obscure. Under such circumstances there is no rational explanation at hand, and the inquisitive but uninstructed mind is readily led to suspect natural or supernatural secret agencies as the volitional causes of the illness; and often also the Indian comes to suspect as the actual agent of a disease some material or magic object such as in his belief might cause the principal symptoms if introduced into the body in a natural way and with his knowledge.

Thus in regard to etiology, pathology, and necessarily also the treatment of disease, the Indian reached the conclusion that there exist two chief classes of ailments: (1) Those of an ordinary character, which have their origin in extreme old age, in accidents, or in some other palpable manner, and which can be interpreted and occasionally dealt with in a more or less simple way; and (2) those of a mysterious nature, incited by some adverse natural or supernatural power, sustained often by magic or particularly by some material agent introduced secretly into the body, and requiring special, largely thaumaturgic, treatment.

In brief, the fundamental and universal characteristics of Indian medicine in the Southwest and northern Mexico are the notions that all serious or protracted illness the cause of which is not clearly appreciated by the senses is due to occult evil influences of men, animate or inanimate objects, spirits, or deities, and that the influence is exercised by a magic or a secret introduction into the body, particularly during sleep or through touch while awake, of a noxious object or objects, as poison, a worm, an insect, a hair, a thorn, a live coal, which produce and keep up the morbid manifestations.

Death from disease, especially of a young male adult, is regarded as the work of supernatural agencies superior in power to the counter agencies that were employed as a cure.

MEDICINE-MEN

The supernatural elements in the Indian's notions of disease led him to offer invocations (or prayers) and incantations, to make offerings, to establish and practise an intricate system of tabus, regulations, propitiatory rites, and fetishism, and to seek persons capable, through supernatural endowment, of employing or of determining the proper safeguards and remedies or of controlling or counteracting the powers that caused the disease. Thus arose the class of individuals, mainly elders, popularly called "medicine-men" and "medicine-women," supposed to possess the extraordinary and mysterious powers described, as well as special fitness for serving in other contingencies as priests or priestesses. These individuals are believed to have come into possession of their sacred healing powers prenatally, or to have received them in dreams or in connection with some notable event in their lives. By means of these special gifts, and with the aid of fetishes and other expedients, they are supposed to recognize the mystic or volitional inciting cause, particularly the active or instrumental evil agent of the disease, to choose the most effectual invocations, incantations, "medicines," and physical means necessary to prevent further action of this cause, and to remove or neutralize the objective agent to whose presence the suffering is due. Generally the medicine-man is supposed to have received, also from supernatural sources, a particular song or songs, fetishes, and other expedients or aids, which constitute the essential means of his practice. These resources vary in character with practitioners, though apparently not much with the same individual. The priest-healer may "be given" other songs or discover other fetishes in time, or he may acquire them by purchase or gift from other medicine-men.

Particular songs and other expedients are employed for particular diseases or classes of disease, real or imaginary. Many of the practitioners, not having a large supply of songs, fetishes, and other requisites, are specialists only, assuming to cure but a limited number of affections. In some tribes nearly all the medicine-men are thus limited in their practice, while others treat all classes of disorders. Among the Pueblos, in addition to the professional medicine-men there are many who are supposed to aid in curing special diseases by virtue of their membership in certain societies. Some of the medicine-men have acquaintance with the use of the knife, splints, massage, and other physical means, as well as with medicinal remedies; but usually these are employed in association with songs, invocations, passes with saliva, and practices of more mystic nature. Their whole treatment, especially when practised with sincerity, is strongly suggestive and impressive, and must exercise a deep influence on the mind of the patient. Among some tribes there are grades of medicine-men, and among the Pueblos are found societies of healers, though not all of the members actually practise. The organization of these societies is very complex, and their study belongs purely to the domain of ethnology.

The medicine-man is generally called for the treatment of those only who are seriously ill, and often he has one or even two or more assistants. He may have to be paid in advance, and not seldom exacts a large compensation. His first aim is to find a cause for the disease; his second, to determine the particular objective agent employed thereby. The procedure with the patient differs much with the various practitioners. If the cause of the illness is not manifest, the medicine-man inquires into the dreams, symptoms, transgressions, especially of tabus, of the patient, and examines him visually and even by touch to determine to what category of influences the ailment should be attributed. When he decides this, he is expected to make known the cause, and usually he tells also what tabus have been broken, and occasionally even points out a sorcerer. The medicine-man sometimes calls in or refers the patient to other practitioners, specialists in the particular line of affections under treatment, this course being adopted probably as a means of avoiding the responsibility of a hopeless case.

The treatment varies according to the supposed necessities of the case, consisting of propitiation for broken tabus, repeated prayers to the elements or deities, the deposit of prayer sticks or countercharms in shrines, appeal to the patient's personal protector or totem, the use of especially effectual songs, rubbing or kneading (sometimes quite violent, though employed more commonly for supposed magic effects), rubbing liquid medicine into the skin, extraction of the objective cause of the disease, blowing air or tobacco smoke on the patient, passes with fingers moistened with saliva, ceremonial observances and rites, including painting of the body of the patient as well as that of the medicine-man, and making sand paintings, noises (made with voices, rattle, or drum), commands and exhortations to drive away bad spirits, assurances given the patient, various symbolic representations, purification of the body by sweat baths, purging and emesis, strong sucking, cauterizing, scarifying, bleeding, external applications, the administration, externally or internally, of secret, magic, or other medicine, and various regulations of the behavior of the patient. In the larger curative ceremonies several medicine-men act conjointly, or, if but one is present, he may have from one to several assistants.

The extraction of the material agent of the disease, by means of the hand or by strong sucking with the mouth, is sometimes performed symbolically, but more frequently the object is assumed to be actually removed. It may be a thorn, a piece of coal, a hair, an insect, a worm, or other substance suggesting by its appearance or nature the symptoms of the disease. It is usually exultingly shown, and then destroyed.

The Indian medicine-men of to-day are chiefly men of advanced years, shrewd, and knowing (see pl. XXVII, *a*). Their dress and daily life are in no way distinctive. Many are undoubtedly sincere in all they do, and among them are most impressive figures, but the majority to a greater or less extent are charlatans. Most of the latter are adept in jugglery. The medicine-men are called on in many contingencies by individuals, and even by the tribe, and the duties of some are those of the priest rather than of the healer. A few among them are trusted implicitly, but the majority are chiefly feared. They exercise a profound influence for good or evil in the tribes, but they themselves occasionally suffer. Of course they do not always cure. Failures in the case of children are readily excused. Single failures with adults may also be satisfactorily explained on the ground, for example, that the bad heart of the patient was responsible for the trouble, but if a number of patients die successively the career of the medicine-man concerned generally comes to an end. He is believed to have lost his curative powers, or even to have become a wizard, and, to prevent his doing further harm, the tribe may kill him. While the killing of a medicine-man under such circumstances has never been witnessed by whites, so far as known to the writer, the evidence given by the natives themselves must be regarded as conclusive.[a]

The writer was shown the skeleton of a Pima medicine-man (with which were associated some of his paraphernalia for curing) executed by his tribe more than thirty years ago. About the year 1900, according to information obtained among the Yuma, a medicine-man in that tribe was condemned to death, and soon afterward disappeared.[b]

Medicine-women

In addition to medicine-men, there are also in numerous tribes one or more medicine-women. A few of these practise in the same manner as the men, but the majority serve chiefly as midwives and herbalists in much the same manner as do corresponding practitioners among the less civilized whites. They are not addicted to the trickery of the men, but aid in confinements for a fee, and give simple remedies, mostly herbs. Some of the medicine-women met by the writer were shrewd and experienced, and their methods were quite rational and effectual.

Tribal Details

Medicine-men and a few medicine-women are still found among the Apache, particularly on the White Mountain reservation; there are also women especially skillful in confinements, and others who sell medicinal herbs and roots. The medicine-men and medicine-women proper are called by the Apache *ty-yin*, which means "wonderful" (see pl. XXVII, *a*). Their reputed knowledge and their songs are

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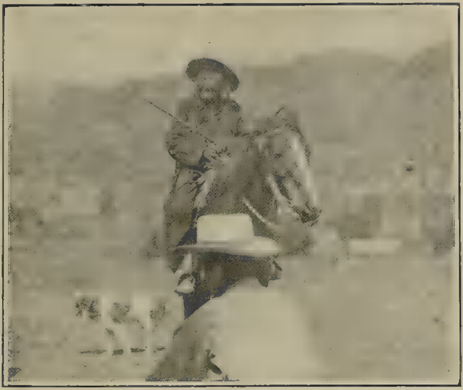
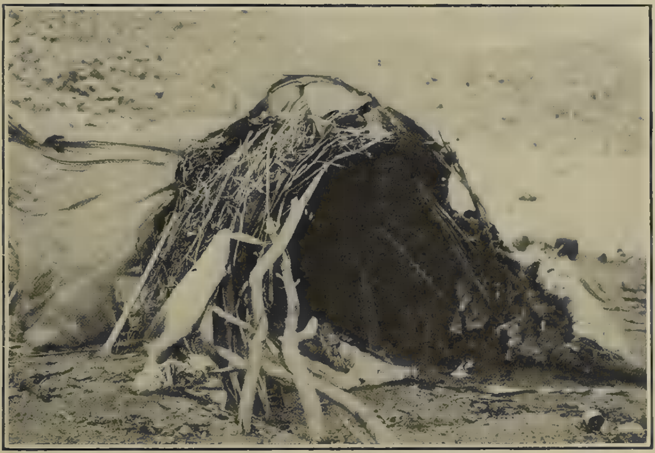
[a] Mrs. Stevenson states that she saved a Zuñi medicine-man from hanging, which was to have been inflicted on him for supposed witchcraft.

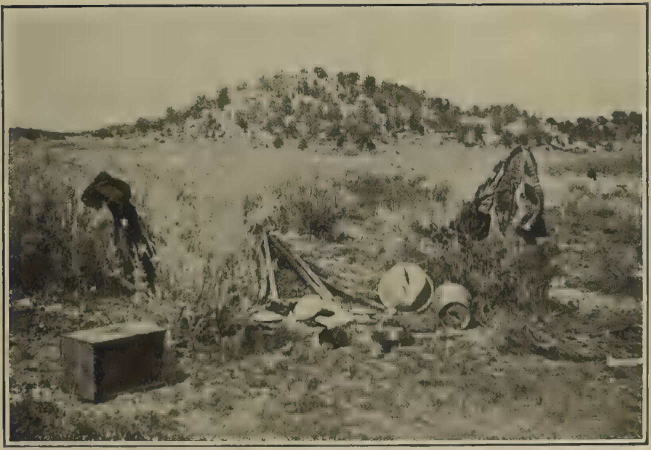
[b] About 1890 four Yuma were tried and found guilty of killing a medicine-man who had lost four patients (W. T. Hefferman, Medicine Among the Yumas, *California Medical Journal*, San Francisco, 1896, XVII, 136-137).



a "BRIGHAM YOUNG," WHITE RIVER APACHE MEDICINE-MAN



b WALAPAI HUT FOR THE CHRONICALLY ILL OR THE VERY AGED



c REMAINS OF A SOUTHERN UTE DWELLING IN WHICH A DEATH OCCURRED

MEDICINE-MAN; WALAPAI HUT FOR THE SICK; REMAINS OF SOUTHERN UTE DWELLING

given them in dreams, and they are accepted as worthy healers on demonstration of their ability to cure.

The usual treatment of a patient by a San Carlos Apache medicine-man consists in rubbing the affected part with *hadntin*, the sacred yellow pollen of Scirpus lacustris, then singing, and playing on the flute or violin, and finally pretending to extract the objective cause of the sickness by sucking over the most painful spot. A little of the pollen is also often put into the patient's mouth. Recently some of the medicine-men have adopted the practice of painting on the body of the patient, with *hadntin*, the figure of the crucified Christ, praying at the same time to God that the patient may be cured.

Among the White Mountain and the Jicarilla Apache the more important healings require the construction of special medicine lodges.

All the Apache still retain belief in witch medicines. At San Carlos they killed a young woman who pretended to be a witch doctor and who in 1881 and 1882 made some marvelous cures. Two murders committed in 1903 are commonly attributed to difficulties arising from the practice of witch medicine among the Mescaleros. Belief in the practice of harmful (witch) medicine by whites is also entertained to some extent.

The Walapai have several native medicine-men. There are no specialists among these, each practitioner being considered able to cure all diseases. They treat their patients, usually at night, by invocations and songs, accompanied by the rattle, and by various shamanistic practices. They also blow on the part affected and on the hands of the patient.

Navaho medicine-men occasionally engage in very elaborate curing ceremonies.[a] Frequent use is made of body painting and of dry sand paintings; some of the latter are highly symbolic, as well as artistic in execution.

Among the Hopi[b] the subject of healers is both rich and complex. There are medicine-men, society healers, and medicine-women. Several fraternities exist, the members of which claim they can cure disease, but each of the societies limits itself to the treatment of a special line of ailments. There are medicine-men known as *posh-butu* or *pochwimkias*, who relieve by touch only or massage. One such lived in 1898 in one of the Middle Mesa villages. These men are believed to be endowed with special power of determining and finding the objective cause of a disease by touch or by inspection, and their treatment culminates in finding and destroying this object.[a]

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[a] See Dr. Washington Matthews' publications, particularly The Night Chant, *Memoirs of the American Museum of Natural History*, 1902, VI.

A friendly Navaho medicine-man in Chaco canyon, New Mexico, was induced by the writer, not without difficulty, to perform one of his more ordinary incantations over a patient. Both sat down on the ground in an isolated spot. The medicine-man took in one hand a sort of small club, wrapped around with a piece of old cloth, and beginning to sing seconded the rhythm of the chant by striking the earth between his feet with the club, at the same time passing the other hand over the part of the body of the patient where the pains were. As the patient was only slightly ill, there was no further treatment.

[b] For a portion of the information concerning this tribe the writer is indebted to Dr. J. W. Fewkes and Dr. Walter Hough.

Another class of healers among the Hopi are the fire priests, who pretend to be masters of fire and capable of performing many wonderful feats. These are known as *yayawimkias.* They treat inflammation of the skin and affections accompanied by fever or burning. Their theory is that burning sensations of the body and inflammatory cutaneous affections are due to magic of fire and can be overcome by the use of fire or its products. Their methods, though in appearance somewhat different from those of the *pochwimkias*, are really of the same character.

A representative of a third class of healers among the Hopi is the chief priestess of a society known as *marauwimkias.*[b] She is supposed to have the power of curing such affections as convulsions, twitching, jerking, and other contortions. In her treatment she uses a wooden image, the body of which somewhat resembles a tapering screw. This figure she moves in a horizontal plane over the head of the afflicted. The above-mentioned affections are supposed to be due to a twisted heart, which the figure has the power to restore to its normal condition. Certain healers, according to Fewkes, use a treatment by constriction. The body is loose, according to their idea, and must be tied together. Under this treatment a man is tied by a rope wound so tightly about trunk, legs, and arms that he can not move. The head men of the principal Hopi societies are believed to possess curative powers of special kinds in a higher degree than the other members. Thus, the head of the Snake society is a reputed healer of snake bites and the bites of other noxious creatures. At Oraibi, at the time of the writer's visit, there lived a medicine-man who had a reputation as an accoucheur, and was said to be the only one in the tribe having this qualification. His treatment consisted principally of prayers, songs, and devices like those of other medicine-men, partly of the use of herbs and other things, and partly of mechanical manipulation, the latter consisting chiefly of manual pressure upon the fundus of the uterus. There are old women among the Hopi villages who serve as midwives, and any adult woman or man of the family might sometimes aid a woman in labor, yet the services of the above medicine-man were regarded as the most efficacious. No material agent is sought by the medicine-men among the Hopi in ailments attributed to the violation of a tabu, as the unwarranted touch of some sacred ceremonial object.

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[a] See J. W. Fewkes, A Few Summer Ceremonials at the Tusayan Pueblo, *Journal of American Ethnology and Archæology*, Boston and New York, 1892, II, 157.

[b] Compare Fewkes, Minor Hopi Festivals, *American Anthropologist*, n. s., IV, July-Sept., 1902.

In addition to having professional medicine-men and society healers, the Zuñi have also a few medicine-women.[a] As among the Hopi and other Pueblos the whole subject of medicine-men and healing is very complex in this tribe. In searching for the cause of sickness the medicine-men employ crystals. The treatment includes prayers, songs, rubbing or kneading, and other physical means, and numerous vegetal remedies.

The Pima, although not averse to medical treatment from the whites, have still a number of medicine-men of their own. According to Chief Antonio Azul, medicine-men become such through the inspiration of peculiar dreams, in which they are transported by spirits or deities to a mountain and there shown remedies and taught how to use them, as well as what and how to sing in treating the ill. By virtue of this spiritual instruction the man proclaims himself a medicine-man, but before he is allowed to "practise" he must demonstrate his ability to the satisfaction of the tribe by successively removing from patients injurious objects supposed to be the cause of their illnesses. Among the Pima a medicine-man is supposed to be endowed with power to cure only a certain class of diseases and "has no songs for others." Each variety of ailment must be treated with special and appropriate songs and invocations.

The Pima medicine-man also occasionally uses the feathers of an eagle or an owl, which he wets with saliva and rubs over the affected part or pretends to introduce into it. He also pretends to draw out the material cause of the sickness by sucking, and occasionally prescribes some vegetal decoction either for internal or for external application. Some Pima medicine-men claim to have power to communicate with the dead. Usually they say that for this purpose they must visit the graveyard where the person is buried, but recently one has introduced an innovation, saying that for calling the dead person it suffices to take a little earth from his grave; the ghost, desiring to know what is to be done with the earth, follows, and can be spoken with wherever the medicine-man wishes.[b]

Notwithstanding the influence of missionaries for a long period, and their ministrations in time of sickness, there are still to be found among the San Xavier Papago native medicine-men who treat disease according to aboriginal methods. As among their congeners, the Pima, healing powers are believed to be conferred on certain individuals in dreams. These are usually elder men, who announce their dreams and the powers they are supposed to have acquired; if their pretensions are satisfactory to the elders of the tribe they are accepted as healers without ceremony. Among the Papago there is also a medicine-woman.

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[a] For details see Mrs. M. C. Stevenson, The Zuñi Indians, *Twenty-third Annual Report of Bureau of American Ethnology*.

[b] A medicine-man still living at the Casa Blanca group of villages resorted to the following subterfuge: A man among the Pima became very sick. He had lost his wife some time before, and the medicine-man who was called to treat him said that he would summon the dead wife and ask her whether she was not trying to take her husband to her and whether this was not the cause of his sickness. The medicine-man, who was suspected of trickery by some young men and secretly followed, set up in the bushes an object that resembled a crouching woman, which he addressed in his natural voice and answered in a somewhat weaker tone. Before starting he suspected that he might be watched and warned one of the young men not to follow him, as the uninitiated could not bear the presence of the dead. The young men who witnessed the fraud were afraid to confront the medicine-man on the spot, but on returning to the village related the affair to others.

Among the Maricopa the medicine-men also become such through the influence of dreams. They are said to commence to dream about their destiny in childhood, but do not become accepted practitioners before attaining the experience of manhood.

The Mohave have numerous medicine-men. In the past they had also some medicine-women, but none of these are found to-day. A Mohave expressed it by saying, "None are born now." Every medicine-man is endowed with his reputed powers from birth, for the Mohave believe that each lived in another world before this and there became possessed of his qualifications as a healer. The medicine-men also tell the people that power to cure is given them by the deities. These healers are nearly all specialists. They are, according to one of the English-speaking Mohave, the rattlesnake doctor, the fever doctor, the rheumatism doctor, the "cold" doctor, the dropsy doctor, and the doctor of wounds.

Unsuccessful Mohave medicine-men were severely dealt with. As the writer's informant expressed it, recalling a case known to him, "He was a good doctor; then he lost a good many; people got tired of it; other doctors say he not doing the best, we have got to punish him; that is all; we killed him; that was some time ago; now white men will not let us kill. There is one at Needles now we would kill, but white men protect him. We think he gave poison to some of the sick and that they died of it."

The Yuma have several medicine-men and at least one medicine-woman, and are averse to white doctors. They employ massage or vigorous kneading and often treat by diminishing the diet of the patient, or even by prohibiting food and drink entirely. As among the Mohave, unsuccessful medicine-men are believed to have become wizards and are severely dealt with.[a]

The Tarahumare medicine-men, in addition to their other functions, take charge in cases of gestation and parturition, but their rôle is usually mainly spiritual. They exercise their powers in order that the child may be born in the right position and not be bewitched or malformed. The ordinary aid at confinement is given by elder women, but a medicine-man may be called in case of necessity. The medicine-men also supply medicine to those who desire to be successful at the races or games.

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[a] Compare Report on Indians, *Eleventh Census*, 1890, 222, Washington, 1894; also W. T. Hefferman, Medicine among the Yumas, *California Medical Journal*, San Francisco, 1898, XVII, 135–140.

The treatment administered usually by the medicine-man among the Tepecano was described to the writer by one of the tribe substantially as follows:

> When the medicine-man comes the patient lies down; the healer prays and exhorts the winds and spirits; he lights a cigarette, draws in the smoke, and applies his mouth over the painful spot, which he bites a little or sucks, then puffs the smoke away from the patient and spits into his own hands. With the saliva comes usually some small object—a cactus spine, a bit of stone, or the like—which the medicine-man either breaks up in his palm or throws into the fire. He then throws away the saliva. Occasionally he gives also some remedy internally, but his prayers, his touches (especially with the fingers moistened with saliva), and the exercise of his magic power are the essentials.

Fetishes are much used.

Among the Huichol a medicine-man was observed to treat a case of headache by muttering prayers and making passes over the head and face with his fingers moistened with saliva.

In a number of instances, even among the most primitive tribes, Indian medicine-men applied for treatment or for medicine to the writer, in common with other patients.

PREVENTION

Preventive means applied to disease, independent of fetishes, are not commonly employed among the Pima.

In delivery, illness, or wounds there are neither proper precautions nor antisepsis. However, in labor and in wounds some of the steamings, lotions, powders, or gums serve, more or less, as cleansing agents or antiseptics. Absolute ignorance, with its sad results, exists everywhere concerning the transmissibility and modes of aggravation of diseases like ophthalmia or tuberculosis, and other contagious diseases are hardly better understood. If an epidemic develops, isolation is not thought of, but an attempt is made to find a sorcerer who caused it or to propitiate the angry deities. If the disease continues, general helplessness and demoralization set in. Resort may be had to banishing or killing a supposed witch or to magic procedures. Once, when smallpox appeared among them, the Hopi tried to catch and bury the disease. As a last resort, and from sheer fright, the people among whom an epidemic rages flee from their houses, abandoning everything, even some of the dead or dying. There were in 1898, after a visitation of smallpox, several abandoned Navaho corpses in deserted hogans about the Chaco canyon.

When a disease or epidemic recurs with some frequency, as is the case, for example, with smallpox among the Tarahumare, the natives come to regard the affliction as almost a necessity. With this tribe a young man who has had smallpox marries more easily than one who has not, being regarded as more likely to live and hence as better able to take care of his family. Among the Opata, mothers deliberately expose their little ones to measles and other contagious diseases, believing that they must contract them sooner or later and that it is better for them to get through with the ordeal. They appreciate, though it is impossible to say whether through their own deductions, or through other channels, that one attack of such diseases gives immunity for the future.

A few hygienic observances that appear rational are the generally observed sexual abstinence during menstruation; recognition of the transmissibility of venereal diseases, with consequent employment of practical safeguards against them; the knowledge of numerous poisonous plants and animals, with the employment of antidotes; and to a certain extent the use of the sweat bath and steaming. But even concerning these matters occult views are often mingled with the practical. Among the Walapai, Yuma, and others, some of the chronically ill or helpless are isolated in special huts built near the other habitations, but the practice is due to superstition and particularly to the desire to get rid of the inconveniences caused by the patient (see pl. XXVII, *b*).

A beneficial custom, which was probably general in former times and is still followed in many localities, is the abandonment or destruction, after the death of an adult person, of the house in which he died, and also the destruction of his clothing and other personal property. Whatever may have been the original reason for this custom, to-day many of the tribes recognize clearly that the burning of everything with which the deceased came in contact hinders contagion. Among the Ute the hut in which an adult person dies is burned and all property of the deceased, even his pan and cup, is destroyed (see pl. XXVII, *c*). The Navaho abandon the hut and bury most of the property of the deceased with him. The Apache burn the hut with all contents, including objects of metal. Among the San Carlos Apache the burning of the dwelling and all its contents after the death in it of a grown person is general. The people have now very sensible ideas on the subject. They say they do not know what the person died of, and if they should preserve the house or any of his belongings and touch them they might contract the same disease and die also. When they build a new khuva, they know it to be uncontaminated. The Pima used to burn the dwelling in which a death occurred, but do so no more. The Yuma and Mohave abandon or burn the hut and consign to the funeral pyre all the property of the dead. An adult dying among the Zuñi is buried as soon as the habitual observances have been complied with; his blankets are buried with him; his extra clothing and bedding are thrown away; the door of the house is left wide open four days and nights; then the house is whitewashed and the floor newly plastered with mud, after which the dwelling is again ready for occupancy. The Tarahumare abandon the dwelling in case of death within it.

The Jicarillas, Mescaleros, and Tarahumare guard themselves with much care against venereal contagion. The Jicarilla women, who are threatened with death by the men of the tribe should they contract a venereal disease, believe that all white men have such diseases, and in consequence avoid them.

FOLK MEDICINE

Independent of and not interfering with supernatural means of healing there is much simple general knowledge of actual remedies. There are numerous plants and modes of treatment, the use and utility of which are known to all in a given locality, even to the older children; while others are known only by phratries or individuals. The use of such means is empirical and by no means always effectual; yet some are of service, and the mode of their employment is occasionally quite rational. Separate tribes and even portions of one tribe use different herbs and means; a few plants, however, as well as various physical practices are apparently known over a wide territory; but a few of the plants given as remedies are poisonous. The parts utilized are mostly roots, least often seeds and flowers. In most instances the medicine is taken in the form of a decoction, but it is used also as an infusion; in the latter case, after being prepared by chewing, it is applied externally as a salve or a poultice. The dose given is generally ample and is not repeated, though to this rule there are exceptions. In only a few tribes are several herbs mixed together in one medicine.

Other curative means employed by the tribes include sweating, bandaging, splints, scarification, cauterizing, rubbing or kneading, pressure (see under Labor), clyster, and vesication. Some of the curative agents may have been introduced by whites, but no evidence was obtained on this point. Many of the practices and remedies are undoubtedly original with the Indians, and some are quite ancient.

The curing of diseases among the Southern Ute is in the hands of several native medicine-men and seems different in no important respect from that among other tribes of the Southwest. The people are more than commonly superstitious in all that pertains to disease. At Navaho Springs the writer obtained and brought to the American Museum of Natural History a fine old painted skin which used to be the property of a Ute medicine-man and was believed never to have failed when employed by him in curing the sick. After the death of this man, however, the skin "lost all its power" and was readily sold by his wife. The piece is a well-tanned elk skin, covered dorsally with the hair of the animal, while the ventral face bears an interesting and artistic design in several colors (see pl. XXVIII, *a*).

The Jicarillas and particularly the White Mountain Apache have numerous native remedies. The latter have at least six distinct vegetal medicines for gonorrhea. They also use more extensively in curing than any other Apache the sacred yellow pollen known as *hadntin*. This comes from a plant known as *thé-the*, also *tule*, or *totara* (Scirpus lacustris). The powder is generally used externally and in connection with prayers; its action is wholly magical.[a]

The San Carlos Apache know many vegetal remedies. As in other tribes, not all of these are of common knowledge.

Xosh-ka-ya is a very spiny, low, cylindrical cactus (Opuntia emorcyi) growing in patches and known more commonly as *cholla*. They take some of the woody part from the inside of this cactus, tie it on a string, and hang it on the neck, particularly in children, as a charm to keep away disease. When there is any contagion about, they place whole plants of this cactus about 10 paces away from the dwelling and in the four cardinal directions, to keep away the disease. On bright days persons who are very sick lie in the sun outside of the dwelling. Both men and women were seen thus.

A mixture of the *cin-ko-ja* berries with water is believed to be a good food for the sick. Vomiting, produced by tulipi or other means, is a remedy of much repute for weak women. It "cleans them up," and after that they grow fat. The roots of *i-zé i-gag-goh-é-hi* ("medicine-clean-out": Euphorbia), are chewed raw and fresh to induce diarrhea as well as vomiting. The remedy is used for general "cleaning out." *I-zé vla-tal-ka-ia* ("white tops"—"white blossoms something like cotton": Clematis drumondii) is a remedy the root and sometimes also the stem of which are employed to induce vomiting and diarrhea. A decoction made from this plant is administered, especially in prolonged indigestion. Another root that produces vomiting as well as laxation grows in the lowlands and is known as *klish i-zé* ("snake medicine"). Still another emetic which the people sometimes use is the inside bark of a bush known as *ta-dla-tsin*. This bark is used fresh. It is pounded up and boiled, and the liquor is then drunk.

The root of *céh-ji* ("stones": Chrysothamnus, sp.) is boiled, the resulting liquor being taken for pains in the chest. The leaves and small twigs of *el-zes-pa-he* ("brown-medicine": Bouchea ehrenbergii) are pounded up, mixed with water, and applied with the hand in a small quantity over the head in headache. The root of *nau-b-chin-ko-je* ("white-man's berry": Lycium andersoni wrightii), is ground, boiled, and taken for headache. *Na-go-nel-thi* is a plant the root of which is used for colds and sore throat. The patient eats a little of the root as it is or drinks a decoction of it. The root of *chil-to-je* (canaigre: Rumex hymenosepalus), besides having other uses, is taken in the form of a decoction for cough or consumption. *Thlo-til-che-ge* (Janusia

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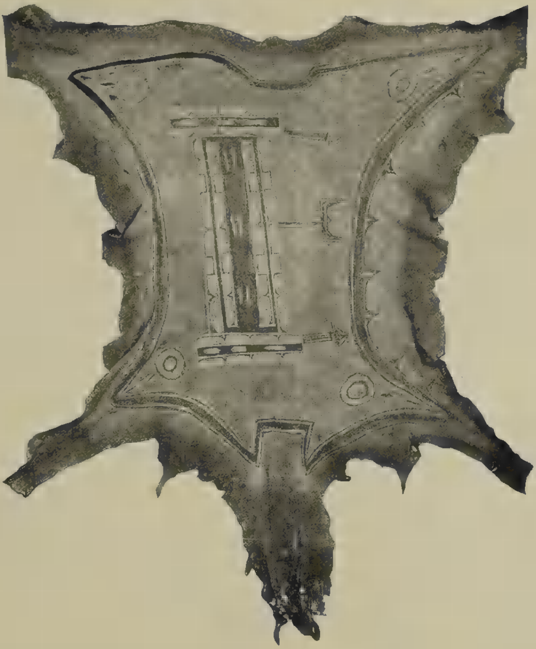
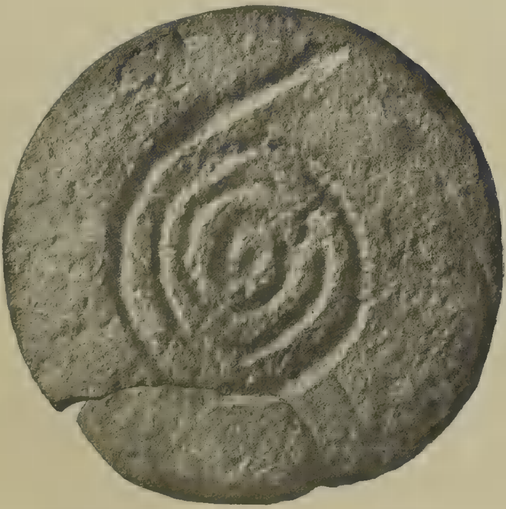
[a] A collection of White Mountain Apache remedies is preserved in the Field Museum of Natural History.



a PAINTED ELK SKIN (SOUTHERN UTE)

Specimen in Hyde collection, Amer. Mus. Nat. Hist.



b STONE BEARING A GLYPH (ANCIENT PUEBLO)

Specimen in Hyde collection, Amer. Mus. Nat. Hist.

OBJECTS USED BY MEDICINE-MEN IN HEALING CEREMONIES

gracilis) is a plant the root of which is chewed by some of the San Carlos Apache as a remedy in sore throat. *Tha-ha-ne-tsa-i* ("bushy-weed": Ephedra viridis) is used by the San Carlos Apache as a cough medicine. The tops and young twigs are boiled and sweetening is added; dose, from half a cupful to a cupful. Occasionally the tops are chewed raw for the same purpose. The root of *i-ze hta-ni* ("medicine eating"), also known as *i-zé vla-tal-chi-hi* ("medicine red top"), is chewed raw about an inch at a time to restore the appetite, and also for headache. The root of *kesh-tsoz i-zé* ("slim-wood medicine": ocotillo, Fouquiera splendens) is much used in the form of a decoction, in gonorrheal dysuria. The seeds, and the bark of the root, of *sas-chil* (Canotia holocantha), boiled, are used in stomach ache, diarrhea, and, in menstruation in cases in which women have "black blood."

I-zé hl-chi; i-zé l'-chi-hi ("red medicine": Eriogonum alatum) grows in the White mountains. The root is much employed as medicine. It is pounded up and boiled, and the decoction taken in diarrhea. The remedy has also other uses. The root of *i-zé l-chi-se* (probably Boerhavia) is given, in the form of a decoction, to children with colic. *I-zé bi-né* (Cereus greggii): The Indian name has reference to the brain or to the imagination. A little of the root is boiled and given in stomach trouble and diarrhea. The root of *me-tci-da-il-tso* (Perezia wrightii) is used medicinally and also in tesvino. A decoction of it is drunk in cases of stomach ache.

Scarification is performed among the San Carlos Apache for any sharp or persistent localized pain. The skin is cut with a sharp object, preferably a splint of glass. They scarify any part of the body, even the temple.

Massage is not practised; but some medicines are lightly rubbed all over the body.

From the tops of certain plants, which are heated in a dry state, these Apache make poultices that are applied in rheumatic and other pains to the surface of the body. They employ no wet poultices. Occasionally for pains in the bowels they use clysters, pouring the decoction through a hollow reed into the rectum and preventing its exit by means of a wad of cotton.

Chil-chek (Covillea tridentata), common along the Gila, is used by the San Carlos Apache for curing pains, mainly of rheumatic nature. The tops, heated over the fire, are applied as a sort of poultice over the affected part. In "sinking fontanel" in infants the San Carlos Apache make a dough of flour and the root of the *i-zé lchi-hi* ("red-medicine:" Eriogonum alatum), cut the hair over the fontanel, and apply this dough to the spot. The belief is prevalent among this tribe that the dough when it dries pulls up the *bi-tsi-ta-go-d-i-le* ("soft place").

As mentioned previously, when a school girl has an attack of hysteria, other girls run to the patient and press hard into the pit of her stomach and rub her wrists and eyes.

About Talklai the "slim-wood" medicine (Fouquiera splendens) is called *kins-cheh i-zé*. Besides making other uses of it, these Apache boil the root and use the hot liquid as a bath for sore limbs, as after a long journey. The root of *kesh-tsŏz i-zé* (Fouquiera splendens) is also applied, pounded up, to any form of swelling, after the skin over the affected spot has been scarified somewhat with a piece of glass.

In cases of snake bites or scorpion stings patients suck wounds, spit toward the four cardinal directions, and pray that they may not hurt. This treatment may be given by a friend.

Opuntia bigelovii is a very pretty and quite rare cactus which grows only on high slopes in a few localities on the reservation. The pith is used in the treatment of sore eyes. It is thrown on live coals and the smoke is allowed to go into the open eyes.

Muh-be-na-toh ("owl smoke": Castilleia?). The root is used in earache. It is boiled and the decoction, when slightly cooled, is dropped into the ear by means of a cloth.

In nose bleeding, which is not common in the tribe, the San Carlos Apache take cold water into the nose or apply it with the hand to the forehead; or they stuff the nostrils with soft material, as a piece of calico or cotton.

In a persistent toothache the Apache tie a sinew about the bad tooth as near the gum as possible and then pull the tooth out themselves or with the help of others.

In fractures they use reduction and apply sticks as splints.

In one instance sweat baths were ordered by a medicine-man for two children sick with measles. These baths are also taken occasionally by the men for rheumatism, or for other maladies when the usual remedies fail.

In open wounds the Apache use the pounded and dried root of *i-zé ha-chi-ne* ("black medicine": Balsamorrhiza?).

The cottony part of the root of the *me-tci-da-il-tco* (Perezia wrightii) is applied locally to sores and small wounds; it is also put around the umbilical cord in the new-born and applied to any sore that may show itself there. There is seldom any trouble with the umbilical cord, but if soreness develops the Apache either use the remedy just mentioned, or powder and apply to the cord a certain root called *za-hl-ka-yi*, or *i-zé hl-ka-ye*.

The *i-zé bi-né* (Cereus greggii) root, dried and powdered, is applied to open wounds and sores.

The Mescaleros firmly believe in witches. The case of a double murder in the tribe from this cause is mentioned in another place.

During the last days of the writer's stay at the reservation in the spring of 1905 a child became ill with tuberculous meningitis. It was treated at first by the agency physician, but, the case not improving, a native medicine-man was called in. He tried at first to remove the cause of the disease by sucking, and pretended to extract from the head of the child a gopher. As this did not help and the child died, he declared that it was bewitched.

The people understand clearly that consumption is contagious, though its nature and the method of its transmission remain to them a mystery. About many internal diseases the notions are very curious. If a man gets close to a woman in labor or steps into any bloody discharge connected therewith, he will have rheumatism or will become otherwise afflicted.

Many of the medicines used in this tribe are known to all, but there are also others that are strictly proprietary, and the individuals who know them, mostly old women or men, keep the knowledge secret and make a profit out of the drugs. The sum paid for a medicine is occasionally very high; one man paid $7, another a horse.

Chin-de i-zé ("devil's medicine": Artemisia frigida) is used by the Mescaleros when anyone is badly frightened. They put some of the root on the fire and inhale the smoke.

For pains in the chest they draw tight a band placed around the chest. This treatment is employed even in consumption.[a]

Tsa i-zé, *I-tsa i-zé* ("head medicine": Hedeoma reverchoni), is used by both Mescaleros and Lipan in prolonged headache. They gather a bunch of the aromatic twigs, rub them in the hands, and inhale the smell. This is said to stop the headache.

I-la tso-e-bi-ta ("bird eats it"). The root is boiled and a drink of the decoction is taken a number of times in cases of bloody diarrhea.

I-ze hú-ié is used in pains in the bowels. The root is ground up and boiled, and the patient drinks some of the decoction, which eases the pains and produces a laxative effect.

Ha-chi-de, *hai-chi-di* (Ligusticum porteri), grows in and about the White mountains. The Mescaleros use the root, drinking a decoction of it in colds and cough. They also grind it, mix with a little water, and rub on the sore part. Occasionally they simply chew the root for cough, or they smell, chew, or smoke it for headache.

I-zé i-tho-hi ("medicine red flower") is a remedy for consumption. All parts of the plant are used together. They are pounded and boiled, and the decoction is drunk lukewarm. A cupful is given before breakfast; the dose is not repeated for some days.

In consumption the Mescaleros use also a remedy composed of two or three kinds of vegetal medicines mixed together. They boil them and the patient drinks about a pint of the tea at one time. The medicine opens the bowels. If the patient feels better the dose is not repeated.

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[a] Dr. E. L. Morgan, of Washington, D. C., observed this same treatment among the Indians of Oregon.

When signs of tapeworm are found in excrements—a condition which is very rare—the same medicine is administered that is given to consumptives. It is believed that this kills the worms.

The Mescaleros have a definite treatment for rheumatism. They rub on the affected parts a decoction of about half a dozen roots, and then make the patient undergo a sweating produced as follows: The one who treats the patient takes a large pan or a tub, or makes a hole in the ground as nearly water-tight as possible. The receptacle is then about half filled with water and some of the roots of which the above-mentioned decoction was made are thrown in as are also heated stones. The receptacle is quickly covered with sticks and then with juniper balls; the patient is then made to sit on the top and is wrapped up to the chin with cloths and blankets. He remains from about twenty minutes to half an hour and usually gets a good sweat. After this some of the same decoction is applied again locally. Before any part of the treatment is commenced the joints are usually marked with the *chi* (red ocher), a custom the origin and significance of which are not known. The patient subjected to the above treatment, which is said to be very efficacious, seldom takes anything internally.

A plant the root of which is occasionally given in rheumatism, in the form of a decoction, is known as *ce-xa-né sá-iu* ("grows through the rocks"). The mixture may also be rubbed into the sore parts.

For gonorrhea a woman among the Mescaleros mixes together parts of four different plants. One of these is known as *ia-ni-tan* ("buffalo eat leaves": Ephedra); part used, leaves. Another is *tlo-shi-pa-he* ("brown weed": Holodiscus?); parts used, leaves and stalks. The third is known as *ih-dí-di-tlo-he* ("thunder weed"); parts used, leaves and stalks. The fourth is *i-zé n-thli-zé* ("hard medicine"); part used, root. A definite quantity of each plant is used and the mixture is boiled. The patient takes one cupful before breakfast; this dose is said usually to be sufficient to effect a cure.

E-chonsh is the dried bud of a wild rose. It forms a constituent of another medicine for gonorrhea.

For swelling and soreness in the groin in gonorrhea the Mescaleros mix the root of *i-zé be-ton-sih*, the root of *nan-ie-wan-séh*, and the leaves and stalks of *i-zé wi-tan-thé-li* (Pentstemon). All are pounded together fine, a little water is added, and the resulting paste applied locally.

Ty-chi-va-ze (Phyllanthus) is the broken twigs and leaves of a parasitic plant used by the Mescaleros for itching in any part of the body. They boil the medicine and drink it or apply it externally.

Kuh-bi-zé ("snake medicine") is in great repute among the Mescaleros as a cure for snake bites. A piece of the root, preferably fresh, is chewed up and applied to the wound, being held in place by a rag. When applied early enough, the part swells or pains very little if at all. Even if applied within a few hours, the root is very efficacious. The interpreter who was helping the writer was bitten by a rattlesnake and used this plant. He was bitten in the foot at 4 o'clock in the afternoon, and being without a remedy did nothing at all to the wound. He reached home with difficulty at about 6 and soon after applied the root. The pains, which were getting to be severe, were soon subdued and ceased in about two hours, so that he slept the whole night. Next morning he applied the root again and after breakfast was able to go about his ordinary work. No more applications were needed. The snake, which was more than 2 feet long, was killed by the man after it had bitten him. A precaution that is said to be necessary in this treatment is to avoid washing the bitten part with water; otherwise much swelling results.

In toothache, after burning the end of a certain kind of twig, the Mescaleros insert it, as hot as possible, into the cavity of the tooth. If the tooth has no cavity, they apply the heated point to the top. This treatment is repeated until the aching ceases. A patient who underwent this treatment and was helped by it said it was not very painful. In the case of a very small cavity in a tooth some have been known to insert a heated wire. Usually the Mescaleros do not try to extract a tooth unless it is loose. In that case they use a sinew or a string, some friend pulling the tooth out. A case may also be cited in which a man with a sore tooth in the lower jaw tied a string about it, fastened the other end to a branch of a tree above his head, and then sat down quickly, the tooth being jerked out.

The Mescaleros also use scarification with glass for acute pain. They say they learned it from the Comanche.

In sore eyes they often employ the leaves of the mesquite. These are ground into powder, which is placed in a thin cloth, water is added, and the liquid squeezed into the eyes.

In very aggravated cases of sore eyes, when a sort of membrane forms over the eyeball (pterygium ?), the Mescalero insert a needle under the "flesh" and, cutting the latter with a splint of glass, "pull it right off."

I-zé da-thle-dji ("blue medicine") is a plant the root of which is used in earache. It is chewed, after which a portion is introduced into the ear, and a portion is rubbed externally.

To stop bleeding, the Mescaleros apply to the bleeding surface spider web (a practice possibly of Mexican origin), or the scrapings from the inside of a tanned buckskin. In nose-bleed they wash the head, if possible in cold water.

Injuries are treated by the Mescaleros as follows: In dislocation the operator rubs the injured part until it is warm and then with a quick jerk forces the bone into place, rubbing medicine on afterward to allay the pain, and finally tying the part with a rag. In fracture rubbing and straightening as well as the pain-allaying medicine are employed, and finally sticks are applied all around the broken part as splints, being bound tightly in place with rags. In case of open wounds, the Mescaleros grind very fine a certain brown root and apply the powder. If the cut is large, they sew the skin with sinew. When they think that a wound should continue to discharge they sometimes insert therein a twisted rag (a custom probably of Mexican origin).

In swellings, the root of the *i-zé l'ku-i* ("yellow medicine") is ground, mixed with water, and rubbed in.

I-zé ltso-hi is used by the Mescaleros on sores of all kinds. They dry the root, grind it fine, apply powder to the afflicted parts. It is said to act beneficially, especially in old suppurations.

I-zé ho-chi-ne ("black medicine": Balsamorrhiza?) is used in fractures or injuries of any kind. The root is ground, mixed with water, and applied to the contused part. A small quantity may also be taken internally.

I-ia-ai (Artemisia dracunculoides) grows about White Mountain (N. Mex.). The Mescaleros, as well as the Lipan, use it as a remedy. They pound the root either fresh or dried, mix it with cold water, and apply to all kinds of bruises or contusions, and even to fractures. Repeated applications are used, which keep the injured part cool and prevent swelling.

The Navaho employ many herbs in curing their various bodily disorders.[a] The use of some of these they possibly learned in the past from captive Mexicans, who became incorporated into the tribe. They also frequently employ sweat baths to restore health. In all the more serious afflictions, however, as in other tribes, reliance is placed in the tribal medicine-men, who are numerous, and who treat almost entirely by fetishes, prayers, and incantations. In serious cases and with rich patients the ceremonial part of the treatment may be made very complex and important. The medicine-man alone, or with several assistants, visits the hogan of the patient, or has constructed a separate lodge, and conducts a curative ceremony of from one to nine nights' duration.[b]

Hostýn Klai, one of the medicine-men about Chaco canyon, brought to the writer, to sell, a circular piece of sandstone about a foot in diameter, containing on one side an old petroglyph, such as are not uncommon in the neighboring country (see pl. XXVIII, *b*). This, he said, was a very valuable stone, a little of which rubbed off and administered to a patient would cure almost any disease. The stone was originally much larger, he said, but had already served many sick people, and in this way had become reduced to its present size. The edges of the stone (the specimen is now in the American Museum of Natural History) show, in fact, numerous marks due to rubbing, but as to the great virtues of the stone the shrewd old medicine-man must have known, for he gladly sold it for half a dollar.

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[a] See also Washington Matthews, Navajo Names for Plants, *American Naturalist*, Sept., 1886, 767 et seq.

[b] See other publications of Washington Matthews, particularly his Mountain Chant: a Navajo Ceremony, *Fifth Annual Report of the Bureau of American Ethnology*, 385 et seq.; and The Night Chant: a Navaho Ceremony, *Memoirs of the American Museum of Natural History*, VI, 1902; also, A. M. Stephen, The Navajo, *American Anthropologist*, 1893, VI, 360-361.

Only a few of the vegetal remedies used in the tribe were obtained by the writer.

E-na i-zé ("white man's medicine": Chrysothamnus greenei) grows to about 1 foot in height. It is found in many parts of Arizona. Some of the Navaho use it in measles and chicken pox. They break up the tops of the plant and put them into lukewarm water; after steeping the mixture somewhat the whole body of the patient is rubbed with the liquor, afterward being well covered. The eruption is said to darken rapidly and to dry up, the patient promptly recovering. The writer's informant, a Navaho, cured thus a year ago his own wife and two children.

Ti-khos i-zé (Ephedra viridis) is used by the Navaho as a remedy for cough. They drink a decoction made from the tops. The Apache, who use the same medicine for the same purpose, call the plant *tha-ha-ne-tsa-i*.

Soreness about the point of attachment of the umbilical cord may be healed by the use of two roots; one of these is known as *i-zé hl-kai* and the other as *i-zé ha-dje-ny*.

A very elaborate medicine outfit of a Navaho shaman is in the Field Museum of Natural History. According to a check-list kindly furnished to the writer by Dr. Geo. A. Dorsey, the articles contained in this outfit are as follows:[a]

4 painted buckskin masks.
1 bunch of large eagle feathers.
12 plume sticks.
3 bundles of mixed feathers.
16 bundles of turkey feathers.
2 fine old bull-roarers.
2 rawhide rattles.
1 gourd rattle.
1 rawhide rattle, similar in form to that of the Hopi Snake and Antelope priests.
1 bone whistle.
1 stick 7 inches long, wrapped with buckskin.
1 stick 5 inches long, wrapped with woolen yarn.
4 miniature bows.
2 horn cups
1 flaked quartzite implement.
1 clam shell.
2 chipped flint implements.
2 chipped jasper implements.
2 flat horn-tipped implements.
1 bundle of fire sticks.
1 necklace of hawk talons.
1 square piece of buckskin.
1 goatskin bag.

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[a] This medicine-man's outfit, collected by A. Montzheimer among the Navaho in New Mexico, was a gift of Mr. E. E. Ayer to the Field Museum of Natural History.

2 badger's feet.
1 small modern Hopi feed bowl.
1 lot of dried juniper berries.
1 lot of dried and chopped up internal organs, unidentified.
1 lot of friable sandstone.
2 lots of bone.
1 large blue-glass marble.
8 lots of herbs and seeds.
1 lot of indigo.
1 lot of vegetal mold.
1 stemless clay pipe.
8 buckskin bags, containing paints, earths, etc.
10 small lots of Indian corn.
1 cone of stalagmite.
2 quartz pebbles.
1 fossil oyster.
2 wristlets of eagle and hawk talons.
56 small buckskin bags, containing red, blue, and black mineral paints; white and yellow earth; roots and herbs; along with numerous vegetal powders, unidentified; pieces of abalone shell; 1 piece of quartz; 1 quartz crystal; 1 lot of carbonated copper; 1 piece of specular hematite; a glass pendant from a lamp; gnarled vegetal stems; 1 notched stick; and a pair of wide copper tweezers.
1 buckskin bag, resembling the Apache "split" bags.

According to many indications the Navaho practise but little surgery. The resident traders report that Navaho medicine-men occasionally cut into the skin of a sick person and suck the wound; but this is done to make the patient believe that his disease, or its evil principle, is really being extracted. According to information obtained at Chaco, cases have been known where abscesses were cut open by medicine-men and the pus was sucked out.

The Hopi use numerous herbs and other objects as remedies, but most of these seem to be employed fetishistically or from some fancied resemblance to the disease or the diseased organ.[a] Thus the *yayawimkia* squirts ashes or soot, products of fire, on inflamed skin; he also cauterizes with a piece of live coal. Clematis and Cowania, because of their hair-like fibers, are used for restoration of the hair (Hough); a decoction of the many-spined thistle is given in dry pharyngitis, in which the patient feels as if he had a thistle in the throat; a twist of a piece of wood in the hands of the medicine-man cures "twists" of the body (convulsions); the skin of a weasel, which glides readily through a small hole, and a conch shell, whose inhabitant comes out easily, kept in the room of a woman to be confined, are charms for easy labor. Some of the teas seem to be used with more reason, but in view of the motives underlying the employment of other "remedies," it is difficult not to feel suspicious even here.

At some of their ceremonies the Hopi drink or rub themselves with mixtures which are supposed to be "good medicine," preventive of all illness; this through their magical power. The washing by the women of their limbs with urine belongs very probably to the same category.

After the Snake dance the participants, who have that day abstained from food, drink "for purification" a decoction made of a number of herbs, which soon acts as an emetic. The vomiting is supposed to clean the body spiritually as well as physically.[a]

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[a] See J. W. Fewkes's A Contribution to Ethnobotany, *American Anthropologist*, IX, no. 1, Jan., 1896, 15–21, and W. Hough, Environmental Interrelations in Arizona, ibid., XI, no. 5, May, 1898, 133–155.

At times the headmen make a special ceremony, the purpose of which is a wholesale prevention or cure of diseases.

The splinters from trees struck by lightning have, among the Hopi, a reputation for great efficacy in the treatment of fractures; they are not used as splints but as fetishes.

A peculiar method of treatment, which Doctor Fewkes saw, was a tight bandaging of a sore limb with a rope. At times, it is said, even the body may be thus wound about. The reason or object of this treatment was not learned. (Compare notes on the Mescaleros, in this chapter.)

Two antidotes for snake bite were heard of among the tribe: A secret decoction of a number of herbs, which is drunk,[b] and the application to the wound of the ventral surface of the disemboweled snake.

The Zuñi also have numerous herbs and roots which they use as remedies. Many of these were collected, and will eventually be described, by Mrs. Stevenson.

All persons among the Zuñi recovering from critical illnesses are said to be adopted into the medicine order. Those who have been struck by lightning and have survived are believed to have special powers for setting fractures.

There are practised in the tribe rubbing and also wound healing [c] and tooth pulling. Fractures are treated with splints. Piñon gum is much in favor in treatment of wounds, being applied to the surface or put within.

Among the Papago the treatment is the same as among other tribes, mostly by incantations, partly by herbs. Open wounds are always treated with powders, gum, or decoctions, which chiefly induce suppuration, and healing by granulation. In fracture there may be applied to the injured limb some supposedly healing substances, but it is also tightly bound up in sticks corresponding to the splints used by the civilized practitioner. Cauterization is used in the tribe in acute or localized pains. A bit of cotton or a little cottony parasitic ball from the Lycium andersoni is burned on the skin over the sore spot.[d]

In acute indigestion the Papago boil for a little while some of the red earth taken from beneath the fire; after being strained a little salt is added, and the mixture is then given to the patient to drink. He has to take this remedy three times, always at mealtime, and he gets nothing or at most very little to eat.

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[a] See descriptions of the ceremony by Stephen, Fewkes, and Hough.

[b] See also Report on Indians, *Eleventh Census*, 1890, 198, Washington, 1894.

[c] Interesting cases of this have been described by F. H. Cushing in A Case of Primitive Surgery, *Science*, June 25, 1897, and by Mrs. M. C. Stevenson, *Twenty-third Annual Report of the Bureau of American Ethnology*. Other treatment is also described by Mrs. Stevenson.

[d] "In acute local pain they [the Papago] sometimes put a piece of cotton on the flesh and burn it there, repeating the process on a new spot at a little distance." C. W. Wood, special agent, in Report on Indians, *Eleventh Census*, 1890, 146, Washington, 1894.

In chronic indigestion the white inner bark of the mesquite is secured, pounded as fine as possible and boiled, salt being added to the decoction; the sick person takes a dose of it early every morning, before breakfast. It tastes bitter and salty.

A little Papago child was met who had on each temple what resembled a plaster. It was explained that this was put on as a remedy for headache. It is made from ordinary flour alone, and is supposed to "stop the air from going in through the temples."

The greasewood (*sho-sho-go-i:* Covillea tridentata) is used as a remedy for contusions. The women boil the leaves, add considerable salt, and wash the contused part with the decoction while still hot.

Powdered root of the *sé-wi-dje* (canaigre: Rumex hymenosepalus) is put on sores, especially on sore lips. The juice of the mesquite tree is a remedy for sore eyes. The Papago boil this juice and put some of it at ordinary temperature into the eye. They also use this for soreness of the eyelids.

In earache the San Xavier people boil a hen's egg quite hard; a small hole is made at one end and covered with a rag, and the egg is then applied to the sore ear.

The cricket, dried and ground up, is taken internally as a remedy for dysuria; it is also given for the same complaint to horses.

The Papago, like the Cora in Tepic, employ the flesh of the rattlesnake in consumption. They kill a rattlesnake, dry the flesh, and use it as powder, a small quantity of which is put into the patient's food while it is cooking and without his knowledge. They believe it sometimes cures the sickness.

The *peyote* is eaten in small quantities by the Papago, but its use is probably not entirely medicinal. The root of the *wá-wish* is used in colds. They break it up, boil it, and drink some of the decoction hot. It makes them sweat. After drinking the tea they cover up and remain indoors. A strong decoction of the root is also used as a wash in case of scorpion bites. Women drink some of the hot tea in painful menstruation.

A-a-li gu-gu-li ("big children") is a plant the root of which is used by the Papago in fever. The root is broken up into little pieces, boiled, and the tea drunk a small quantity at a time. The root is also used in toothache. For this purpose it is ground up fine, mixed with some fat, and put into the cavity of the tooth. It is further used in neuralgic pains, when a mixture similar to that for toothache is applied externally to the painful part.

In snake bite, the snake is killed, torn open, and a part from the inside of it spoken of as "fat" or "blood" is applied to the wound. Sucking is also employed by some.

The Pima have some curious conceptions as to the causes of sickness and curious remedies. In many instances the patient is supposed to have committed some transgression or have broken some tabu. In such cases the medicine-man who is called usually points out the nature of the offense. The cause of consumption is not known, but the people know that it runs in families. They do not know that it is contagious. It is always the medicine-man who finds the true cause of sickness, and the patient often then remembers that he did some wrong as indicated. One of the principal substances that, when surreptitiously introduced into the body, may operate as a cause to produce or aggravate disease, is hair.

The Pima were always bitter enemies of the Apache. Their enmity went so far that they believed if a drop of blood of an Apache fell on a Pima it would cause sickness. If a Pima killed several Apache, although the act was lauded, it was believed that some of the progeny of that man would become insane or otherwise injuriously affected. This result could be obviated by use of Apache hair, a tuft of which, tied with a chicken-hawk feather and an owl feather and burned in a certain way with greasewood, would cure any sickness induced by the contact with the Apache.

As to different sicknesses in children, it is believed that the parents of such children "did not look out for themselves properly" during the period of gestation. They may, for instance, have killed an animal, whose spirit causes the disease of the child. If they happened to kill a dog, the child may be affected with fever; if the animal killed was a rattlesnake, there may be a swelling of the stomach in the child to be born; if a coyote, diarrhea; if a rat, chills. But if the parents are careful and want to prevent the evil consequences of their indiscretion, they may avail themselves of songs for every occasion which will propitiate the spirit of the departed animal.

The Pima do not kill the horned toad. Should they do so one of their children might become "lame in the joints" or hunchbacked. Sometimes, nevertheless, a toad is accidentally killed by some one. In such a case there are again propitiatory songs. Besides this the individual who happened to kill the toad wears red ribbon around his neck, meaning by this to tell the spirit that he did not want to kill the animal and desires to be forgiven. It is also believed that one must not kill the young of the coyote; the mother would revenge herself by carrying off the baby of the family.

Kwa-i-ku-i is the name by which the Pima and Papago know the frontal fontanel. Like the Indians in northern Mexico, these tribes believe that the fontanel may "fall," causing the child to be sick. To cure the child a woman puts a finger into the baby's mouth and pushes the palate upward. After that a little salt and water are applied to the skin over the fontanel.

When an apparently healthy man or woman dies it is generally believed that some medicine-man has caused the death through his magic, that the victim may have been called away by a dead person, or otherwise bewitched.

The women beat the whirlwind with sticks, so that it goes away from their houses. If it overturns anything, they must not touch the object until they have sprinkled ashes over it; failure to observe this precaution might cause them to become deformed. If they find a flattened or twisted branch in a bush, they think it is due to the whirlwind; such a branch possesses power to cure those touching objects overturned by the whirlwind, before ashes had been sprinkled on them. The Pima believe that anyone eating beans from a mesquite tree struck by lightning would have sores on the skin (herpes zoster?), beginning in the region of the liver. Sometimes the sores are said to extend from the liver over the left shoulder and down the back again. A remedy for these sores is a piece of wood that has been split from a tree by lightning or simply a piece of wood from a tree thus struck; this is soaked in water and the patient drinks the infusion. Another remedy is to sing the "lightning songs."

The badger, the Pima believe, is capable of causing disease. It makes the neck swell. The affection is easily cured by warming a badger's tail and tying it over the part affected. There are also badger songs that will cure the sickness.

Owl's feather is used in curing a person who steadily loses flesh and feels ill. The cause of such illness is supposed to be a dream about long-dead relatives. A medicine-man is called, who generally perceives at once that the patient dreamed of dead people. Sometimes a medicine-man is called who does not treat illness of that particular kind, in which case he sends the patient to the proper specialist.

There are a number of vegetal remedies used in the tribe.

The Papago bring and sell to the Pima every year a little *peyote*. The Pima eat it in small quantities, but probably not for medicinal purposes only.

The root of the *a-a-dji-naf* ("slender-cactus:" Opuntia leptocaulis), ground up and boiled, is given as a tea in children's diarrhea when the excretions are whitish in color.

The gum of the greasewood is employed in ordinary, but especially in bloody, diarrhea. The gum is boiled and the patient drinks the tea.

Shir-ko-hi, the ordinary greasewood (Covillea tridentata), is used by the Pima as well as by the Maricopa as medicine. In stomach troubles the branches are boiled and the decoction is drunk hot. In cases of pains in the chest, and even in other parts of the body, the leaves and smaller branches are heated and applied as a dry poultice over the seat of the pain.

Müh-lok is a little bush, the root of which, fresh or dried, preferably fresh, is boiled and the decoction given for coughs and in the beginning of consumption.

Kwi-chu-o-wa-tak, or *kwei-chou-wa-te*, mesquite sap, is also used by the Pima as a remedy for sore throat. They boil the juice, together with the bark over which it flowed, and drink the tea hot. It cures when the soreness is "deep down."

Sé-wi-dje (canaigre root: Rumex hymenosepalus) is employed as a remedy for sore lips and sore throat.

The root known as *wá-vish* (*yerba mansa*, Anemiopsis californica) is reputed to be very effectual in syphilis. The Pima boil it and give the tea to the patient; they also powder the root and apply it externally to the sores. It is said that if a mother affected with syphilis while pregnant is given this tea the child will be free of the disease. Apparently the people are acquainted with the hereditary nature of the condition.

A decoction prepared from the leaves of the willow is given in fever.

Kwei-chou-wa-te (mesquite sap) is also used for sore eyes. The patient places a small piece of it in the eye and keeps it there as long as he can bear it. The tears dissolve part, coloring the eye brown. Occasionally this remedy is of assistance. The Pima also use for sore eyes a decoction of the root of a bush which bears black berries

Che-wa-te mo-to-a-te ("earth carries on head:" Tylostoma) is a little fungus which grows somewhat like a puffball, but has a well-defined stem. The dark-yellow pollen of this fungus is applied by the Pima about the cord of the newborn infant, both as a preventive of inflammation and as a remedy when inflammation or suppuration has developed.

The leaves of a certain plant, or simply grease, are applied externally to sore parts, while wounds are covered with shavings of tanned hide.

Kwei-chou-wa-te (mesquite sap) is also often used as a remedy in the pemphigous and other sores which are common on the faces and heads of little Pima children. The boiled sap is applied directly to the sores, and is said to heal them.

Ih-toh is a bush that grows in the hills about the Pima reservation. The Pima use the root medicinally in syphilitic and other sores, grinding and applying it externally. As an antidote for the irritating effect of the *hāvan tātat* plant on the skin (see p. 183), the Pima use another plant known as *uh-to*, which grows in the mountains. They grind fine the root of this plant and apply it to the seat of the inflammation.

Á-taf (Cucurbita palmata) is a plant the root of which ground is used by the Pima as an application for all kinds of sores on horses.

In cases of rattlesnake bite the Pima suck the wounds; the latest remedy, however, is to kill the rattlesnake, tear it open, and apply to the wound a certain "fat" which is found along the middle of the snake. This application is repeated, and is said to be a certain cure. It is efficacious even when the limb has already begun to swell. Occasionally it is applied even without sucking the wound.

Scarification is used by the Pima in localized inflammations. They make several cuts in the skin with a piece of glass, allow a little blood to flow out, and then apply the heated leaves of a plant known as *sai-u-us*.

Cauterization as a counter irritant is used frequently and in all painful internal affections. For this purpose there is employed *kok-su-vo-le-tek* ("the ball of it"), a small, cottony ball of parasitic origin, occasionally found on the Lycium andersoni. Both the Pima and the Maricopa use these balls for moxa. A ball about the size of a pea, that has been well dried, is applied over a painful spot, and set on fire, burning to the skin. Sometimes more than one ball is applied at a time. The balls are used on any part of the body in many diseases, and even in fractures. The local effects are an eschar or a blister, followed by a pigmented spot.

Of the *i-huk*, or Martynia, the part used is the dry basal segment of the pod. A bit of this is applied burning to the skin over the sore spot. It burns like a piece of punk, sometimes producing a little blister, but more often leaving only a small eschar or a dark spot. The writer saw several such burns, not older than twenty-four hours, over the stomach in a patient suffering from consumption.

Massage is said to be used in some instances. On the occasion of a hysteric spell in a Pima mixed-breed schoolgirl, the other girls were seen to run to her, rub her all over, and knead her stomach. The schoolgirls not seldom employ of their own initiative rubbing and kneading with those who are sick, especially in localized pains.

A kind of poultice is made by putting into a wet cloth warm ashes, the poultice being applied over the painful part. Poultices made in this way are applied sometimes for pains in the stomach.

The Pima deny using regular sweat baths. They do, however, employ perspiration. The most common method of inducing it is by covering the patient with a lot of blankets.

A case happened a short time ago in which a woman, recently delivered, was ailing. The trouble was diagnosed to be due to retention of some of the blood that should have naturally come out after the labor. The treatment was as follows: A spacious ditch was dug in the ground and well heated with fire. The patient was then laid in this ditch with the lower part of the trunk and the lower limbs well covered, the object being to induce profuse perspiration. The woman stood the treatment well and got better, though not quite well.

In toothache a young branch of the *shir-ko-hi* (Covillea tridentata) is sharpened to a point and heated in the fire. The point is then inserted into the cavity of the diseased tooth. This remedy is said to stop the pain, although it may have to be applied more than once. In one case of toothache in a Pima man a sinew was tied to the sore tooth, close to the gum, and the other end was fastened above the knee of the patient, who was sitting on a stool; then the one who invented the device, turning around the patient, pricked him suddenly beneath the thigh, causing a reflex jerk by means of which the tooth was pulled out.

When a bone is broken the medicine-man claims to introduce cotton or some other substance to fill cavities caused by the fracture. This is accomplished by the medicine-man swallowing, or pretending to swallow, the substance used, after which it passes in some mysterious way from him to the patient. Splints and bandaging are also employed. The splints are generally made from the flat, elastic ribs of the saguaro (Cereus giganteus).

The Maricopa also have numerous native remedies. Owing to the marriage of some Pima women into the tribe, they also use certain remedies, as the canaigre and *wāvish*, etc., in vogue among the Pima.

The powdered fruit of the *tat* cactus, mixed with a very small quantity of ground wheat, is considered an effectual medicine for diarrhea.

The greasewood (Covillea tridentata), known by the Maricopa as *iv-sesh*, is used in disorders of the stomach. They boil the branches for about half an hour and drink the tea, which is made rather weak, in quantities of from half a cup to a whole cup at a time. Nothing is added to it.

X'tá-chách ("reed lay down") is a bush with fragrant yellow blossoms. The blossoms are gathered, dried, and boiled; the hot tea is drunk for colds. It has a good flavor and "often helps;" it is used at times in headache.

In constipation the Maricopa occasionally use the juice of a little plant known as *ku-ŕír*, which is of a milky consistency. The patient chews up some of the stalks and swallows the juice, which acts as a violent purgative, making a man sick for half a day. In headache a band is tied about the head and the patient eats less than usual until the aching ceases.

The mesquite juice is dried, ground fine, and is then used as a remedy for sore eyes by applying the powder to the lids (not to the eye itself); after sometime it is washed off with warm water.

Kwel ("leather") *ku-ni-a-dyl* ("that you put on") is the bean of the castor-oil plant, which is used by the Maricopa as a remedy for earache. The crushed beans are mixed with water, and after the mixture is heated, one or two drops are put into the ear. In case of sores a very finely ground sand is applied thereto. Occasionally dried leaves are used for the same purpose. Abscesses or boils are cut open, washed with water, and covered with pounded dried leaves.

The Maricopa employ bloodletting in persisting pains and in paralysis of any limb. They open veins (distinguishing between veins and arteries) binding together the cut surfaces with rags when they think sufficient blood has been drawn. In the case of a horse receiving an injury in the eye, one of the veins on the temple of the animal is opened.

The Maricopa often employ rubbing (massage) to alleviate pain. It is said that formerly the medicine-men of the tribe used no treatment but rubbing, which was continued sometimes for four days. More recently they have learned to treat by incantations and with the help of the rattle and eagle feather. There seems to be no special system of rubbing. In uterine pains the women at times bind on the lower part of the abdomen a dry poultice of warm earth, or they knead the abdomen with the hands. In rheumatic pains they bind the fresh twigs of the greasewood, heated, about the seat of the pain. When the parts in proximity to the umbilical cord become sore the Maricopa apply fine dry earth or finely ground gravel. In umbilical hernia (rare), large black ants are gathered and are allowed to bite the swelling, which, it is believed, will be reduced in consequence of this treatment; for the same affection a tea made by boiling mesquite roots, which have been cut into small pieces, is administered to the child. No pressure is applied to the protrusion.

In fractures the Maricopa depend on their medicine-men, who manipulate and straighten limbs, and then bind them up. The informant was not able to tell whether or not they use splints.

Among the Mohave the treatment of diseases is largely based on superstition and magic. The medicine-men are very powerful. Their treatment is metaphysical; they are endowed with special powers and can stop pain or cure sickness by the exercise of these powers alone—they have no need of medicine. Usually the medicine-man cures by prayer or songs. When the patient has fever he blows it away. When a part is painful he squeezes it, without, however, using massage. Every medicine-man has his own special songs and prayers. One of the snake doctors can "kill" the rattlesnake poison in an instant without any medicine or manipulation. He never lost a patient who was bitten. This medicine-man refuses his patient water until the pains are eased. In two days the patient is all right. The Indians have "got to be right" with this medicine-man. Some of these doctors possess the power to reform even unruly children and babies and make them behave afterwards.

There are used in the tribe, nevertheless, certain vegetal remedies and physical means to alleviate sickness. If the abdomen is "rumpy" after childbirth it is thought to be full of blood; in this case the woman lies abdomen downward on hot sand, at the same time drinking hot water, and "all comes out."

Among the Yuma old invalids inhabit separate huts.[a] Numerous herbs and some physical means, especially rubbing and cauterization with live coals, are used in curing. The hopelessly ill lie in the sun. Details were not learned. Hefferman[b] saw mud applied to a wound, burning the skin with a live coal on the end of a stick, and administering an emulsion of pumpkin and watermelon seeds; he also saw a case where the patient's stomach was kneaded by the medicine-man's knees.

Among the less civilized Mexican Indians all that relates to diseases and curing is substantially like what is met with in the tribes of New Mexico and Arizona; but among those who live near the Mexicans (and these are in the majority) many views, methods, and remedies have been adopted from the latter, and much of Indian origin has been forgotten with time.

Among the Opata Catholics prayer and offerings to saints, and religious amulets in curing have taken the place of the prayers and songs of the shaman addressed to the deities, and of old fetishes.

Sick persons among the Tuape Opata must not touch water except to drink, and must not shave, cut or comb their hair, or taste any fruit. To rub lard into the body is regarded as very beneficial.

The Opata women, like the Papago, Apache, and others, attribute a peculiar influence on the health of the new-born child to the anterior cranial fontanel. This soft place on the infant's head is called *mollera* or *mojera*, and is believed to be capable of "falling down," thus making the child ill. To cure an illness supposedly due to this cause a woman takes the child on her knee, lets its head hang downward, and, introducing her thumb into its mouth, presses strongly upward upon the palate, sometimes with force enough to abrade it, thus "raising" the *mojera*. At times even when an older child is ill an old woman will suggest that its *mojera* needs "raising," whereupon the patient is held by the heels and shaken up and down.

Native remedial treatment is on the decline. In olden times the people used many means which are now forgotten. The anonymous Rudo Ensayo is replete with accounts of native medicinal herbs and their uses. There were remedies for amenorrhea, difficult labor, wounds, fractures, etc. The *peyote* was well known to the Opata, as well as to the Yaqui. Treatment by incantation and sucking was also practised.

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[a] "The ignored, aged, and infirm construct small conical huts of willow twigs." Special agent Dr. W. E. Ferrebee, in the Report on Indians, *Eleventh Census*, 1890, 221, Washington, 1884.

[b] Medicine among the Yumas, *California Medical Journal*, San Francisco, 1898, XVII, 135–140.

Old Opata women cure with such herbs as the peppermint, *rosa de castilla*, etc. Camomile, red lead, and metallic mercury are procured from the dealers and used quite indiscriminately. Doctor Alderman knew of a child who was given a decoction of a mixture of native herbs, which resulted in death a few minutes later. Some of the old women's mixtures are said to contain twenty or more ingredients, as barks, thorns, roots, leaves, flowers, seeds, nuts, grass, and domestic supplies, as coffee, rice, salt, sugar, tea, pepper, and eggshells. These are sometimes boiled in water, milk, wine, or vinegar. Such concoctions are given even to babies.

For snake bites the people employ a lactescent cathartic plant called *golondrina*. Scalds and burns are sometimes treated by the application of dog excrement.

In flooding, the Opata women set fire to mescal wine, into which, when warm, is dipped a piece of muslin; this is introduced as far as possible into the vagina. This treatment is sometimes, though not generally, effectual.

Among the Tarahumare the ancient methods and means of curing are as yet fully preserved.[a] The curing of diseases and injuries is carried on by native medicine-men, who, at the same time, represent intermediaries between the people and deities. The treatment is partly medicinal and partly suggestive and metaphysical. There are limited attempts at surgery. Medicinal plants are known generally and are often employed without consulting a medicine-man. Certain roots are used for disorders of the stomach. For malaria the Tarahumare employ *tascate sabino;* for dolores costales ("pains in the chest"), *palo mulato*, or *kopalkin;* for syphilis, *chuhkaka* or *chukuchic*, both externally and internally; and for many diseases the *peyote*. They have no very reliable remedy for stopping the flow of blood. In fractures they use *peyote;* they also cut off the heads of a number of small lizards (*gartichas*) and, after opening their bodies, bind as many as possible over the fractured part. The larger open wounds also are treated with *peyote*. In this manner, the writer was told, the Tarahumare cured a serious arrow wound in one of the medicine-men. In syphilis they use a small animal known, after the Mexicans, as *esculapion*, and the tarantula, cooking one or both of these and smearing the patient's body with the decoction. In a case of orchitis attended by much swelling the medicine-man applied chewed *peyote*, and a speedy cure resulted after one application. In some diseases the odor of the *tascate sabino* is wafted to the patient.

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[a] See also Hartman, The Indians of New Mexico, *Congrès International des Américanistes*, Stockholm, 1897; and C. Lumholtz, Unknown Mexico, New York, 1902.

In snake bites the wound may be sucked, but the principal remedy is the *peyote*. Sometimes a piece of hot coal or burning wood is applied to the wound and the patient is given to drink an infusion of *charia* or *fresno* (ash).

The Tarahumare to-day seem to know nothing about trephining, an operation which was performed among them in the past to a limited extent.[a] The only actual operation learned of was castration. In at least one case within recent years this was inflicted as a punishment upon the lover of a married woman.

The materia medica of the Tepecano consists of many herbs, and, when these fail, are employed prayer, songs, and ceremonies. The herbs most commonly used are *palo amargo* (native cinchona), *herba de San Antonio*, and oak leaves, for *calentura; palo mulato*, mainly for pains; *hiculi* (*peyote*, obtained from the Huichol), *vervena*, *rosa de castilla*, the root of *ko-ho-te*, and the seed of *ci-ci-va*.

The practice of surgery is not developed to an extent beyond that already indicated, but broken bones are given proper care.

In difficult labor the patient is given to drink a decoction of *herba buena* or *rosa de castilla*.

The Huichol[b] use but a few remedies except the all-important *peyote* or *hiculi*. There is no isolation of patients. The sick rely on the *hiculi* and the medicine-man, who treats by prayer, incantation, and passes over the aching part with saliva. When the patient does not improve, he lies in the sun, in the hope that it will help him. When a person dies of any disease, everything in the hut is washed, and the body of the dead is washed with *pochote* water, in imitation of the holy water of the Catholics.

The spring water of certain caves, particularly of the sacred cave near Santa Catharina, is believed to have curative power. The Huichol wash themselves with the water, which contains sulphureted hydrogen, and drink of it with a *jicara* (small bowl made from a gourd), which is always to be found at the little pool.[c]

The writer was told by the Huichol that they practise but little surgery. They treat wounds with applications of water and with the *hiculi*, and stop the flow of blood with lime juice and water; they also apply to open wounds plasters of fat. The people offer in sacred places, in specially constructed little houses or shrines, but also in caves and on high rocks, many interestingly decorated prayer sticks, asking the deities for cures.[a]

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[a] See Lumholtz and Hrdlička, *American Anthropologist*, x, 1897, 389 et seq. The anatomical and anthropometric description is by the writer.

[b] See also C. Lumholtz, Unknown Mexico, New York, 1902.

[c] A young Huichol, who came to this cave for cure, was seen by the writer to divest himself of everything except his breechcloth, approach the little pool, and offer aloud a long prayer, after which he drank a small bowlful of the water, with his hands applying more of the water to his body. It was a very impressive performance. The cave is situated in a most rugged canyon and is difficult of access. At the main entrance are shrines containing many sacred arrows and other offerings. Inside are numerous decorated prayer sticks, shields, and other symbolic objects deposited by the patients. The cave is nearly dark, but dry pine splints are always ready near the entrance for use as torches by the visiting sick or convalescents. A Huichol family in gala dress was seen to visit the cave to offer thanks for some benefit received. The secret of the location of the cave is jealously guarded, and the only way the writer could induce a Huichol to guide him to it was to pose himself as a patient.

The Cora, like the Huichol, are extensively treated by their medicine-men with prayers and incantations, sucking of the affected parts, and pretended neutralization of the bad blood of the disease by means of fumes of a cigarette blown on the sore parts or saliva smeared thereon during incantations.

Rhi-ik is a *talega*, or pouch, made from the cuirass of the armadillo. Such a pouch is not only used as a receptacle for a few special articles, but is supposed to have medicinal powers of its own. Small pieces cooked in water are a remedy for pains in the stomach.

In consumption, which, though rare, occurs in the tribe, the patient endeavors to find a rattlesnake and to cut off his head and tail before the reptile is angered. The body of the snake is then washed, toasted, and dried and a piece of it is taken with each meal.

A bed is made of the leaves of the *mos-to-chi*, an aromatic tree smelling somewhat like mint, for patients with *frios* (malaria).

Sweating is employed in rheumatism.

A decoction of *gartichas* (small lizards) is used for pains in the shoulders and body.

Snake bites are cured by the Cora in the following manner: As soon as possible after a bite is inflicted a pig is caught and, its snout having been cut off, the raw surface is applied to the wound; some of the animal's blood diluted with warm water is drunk.

A gunshot wound is treated with slaked lime. When fractures occur, reduction and healing are aided by the use of splints and bandages. No surgery is employed.

The Otomi of Hidalgo continue to use many native remedies. Some of these have been adopted by the neighboring Mexicans.

For rabies the Otomi (and now also the Mexicans) around Atengo use an infusion of a plant known by them as *deshanoi*.[b] One leaf of this plant is given to the bitten person in an infusion. Usually the leaf is thoroughly crushed and mixed with a cup of hot water. If any symptoms of rabies have already appeared, the patient is given two leaves or even three leaves at once, but more would be regarded as dangerous to life. Among plants more frequently used is aconite, the leaves of which are pasted on the sore spot in facial neuralgia or on the temple in headache. *Muikle* is a green herb, often specially cultivated, whose leaves when cooked turn the water red. A decoction of it is used for disorders of the stomach. *Panathi* ("hot fire") is a caustic plant which grows to 2 feet in height at the base of cacti and bushes or trees. Its leaves applied to the skin act like cantharides. *Tumba-vaquero*, a plant known by the Otomi as well as by the Mexicans, is used also for rabies. According to the writer's informants the bulbous root of this plant is extremely sudorific. A quantity of the root that can be piled on a piece of money the size of our 25-cent piece has been known to produce sweating lasting three days. Trompetia blanca is a plant held in great repute among the Otomi and some of their white neighbors as a cure for poisonous bites, including those of snakes. About an ounce of the leaves of this plant is crushed on a metate and administered, mixed in a glass of pulque. One dose is said to be sufficient as a rule to prevent death. Portions of this plant which the writer brought were sent for identification to Mr. C. F. Millspaugh, of the Field Museum of Natural History, who pronounced it without doubt "a Rubiad in the Cinchona bailiwick, and known botanically as Manettia reclinata L."

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[a] See collections in the American Museum of Natural History.

[b] An educated Mexican of the district to whom this remedy is known, and who himself has administered it, told the writer the plant is the Fullidora capolinata. The native name translated means "kills mice" ("mata ratons").

So much for Indian medicine. All that has been said in this chapter, however—and the same statement is applicable to other portions of this paper—affords merely a glance at the multiple conceptions and practices of the Indians. A thorough investigation of Indian notions concerning the various bodily ailments and the means employed for curing them, with the reasoning that leads to the selection and mode of use of such means, an investigation carried to the minutest details would undoubtedly reveal a wealth of additional data, invaluable to the study of folklore and of primitive mentality. There is much here that remains to be brought to light. And, notwithstanding the ever-increasing encroachments of the white man's influence, such investigation is still feasible with most of the tribes mentioned.

APPENDIX

A. NATIVE FOODS
B. TABLES OF DETAIL MEASUREMENTS AND OBSERVATIONS
C. BIBLIOGRAPHY

A. NATIVE FOODS

Among the San Carlos Apache, Walapai, Pima, and Maricopa, this subject received particular attention, opportunities for similar investigation in other tribes being less favorable.

In the course of his investigations respecting the principal native foods of the San Carlos Apache, the writer learned of the following:

Xos-ka-tl ("spine sewing:" Echinocereus wislizeni) is a large cactus, known more commonly as *biznaga*. The plant has yellow fruit, full of small black seeds which are eaten by the Apache after being parched, ground, and boiled into mush. In extreme thirst the Indians occasionally have recourse to this plant for the somewhat insipid juice it contains. All the Indians in the Southwest are acquainted with this use of the *biznaga*.

The seeds of the *chos-tha-stha-ne*, a high, branching Opuntia, are used in the same manner as those of *biznaga;* or the flour made from the seeds is eaten, followed by drafts of water to aid in the process.

The red doughnut-like fruit of the *i-zé bi-né* (Cereus greggii), and even the flowers of the plant, are eaten, and the same is true of the fruit of the *xos-cho-le* or *xos-de-chu-le* ("round or short thorn:" Mamillaria grahami), a small cactus provided with fish-like spines, growing on the high mesas north of Talklai, and of the "tuñas" of several varieties of the flat-leaved *chus* ("thorn") cactuses.

The most valuable of all the cactus fruits, however, is the *nol-bia-ga*, borne by the giant cactus (saguaro, a variety of Cereus giganteus). Every year, even up to the present time, when the fruit of this cactus begins to ripen many of the Indians move to the locality where the plant is found, remaining there for two or three months until the last of the fruit has matured and been gathered. This is a period of prosperity, and the Indians return home fat. Large quantities of the luscious fruit are eaten raw on the spot, and what can not be consumed there is dried in the sun, made into large cakes, and carried home, where it lasts at times for many months.[a]

The numerous small black seeds of the *nol-bia-ga* are also used alone, being roasted, ground, mixed with water, and eaten as mush.

Another valuable article of food of these Apache is the mescal (Agave, sp.?). First, the leaves of the plant are cut off, leaving a central body, or core, the size of a large cabbage. This is placed in a hole in the ground which has been thoroughly heated, where it remains two or three days covered with leafy branches or with grass and earth. When it is thought to be properly cooked the mescal is tested through a small hole. If ready to be eaten it is brown in color, of soft consistency, pleasant smell, and sweet taste, not unlike that of weak molasses. The juicy, fat leaf bases are then peeled off and eaten by all. The mescal plant is easily digestible and, as it contains a large quantity of sugar, must be nutritious. On occasions of great scarcity of other food mescal alone has been known to sustain the Apache as well as other tribes, for weeks and months at a time.

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[a] Unfortunately, after six or seven months what is left of these cakes usually has become infested with worms. Desiring to buy some of this product, the writer was brought, in February, 1905, a large piece in this condition. The native women and children ate from this piece, however, which preserved its good color and smell, without any repugnance whatever to the worms.

The banana-like sweetish fruit of one of the "soap-weeds," or yuccas (probably Yucca schottii), is cooked, the skin peeled off, and the pulp eaten. If abundant, some of the fruit is dried and preserved for future use.

Of foods other than the cactuses one of the most important is mesquite beans. These are gathered in as large quantities as possible and preserved. In time they become partially spoiled owing to the presence of worms, but this does not prevent them being used. In preparing them for food they are pounded into a pulp, for this process a cavity being made in any convenient rock; the pulp is then soaked in cold water, the mass being squeezed out by the hands or through a basket; the remnants are thrown away, and the sweet liquid is drunk. Another way of preparing mescal is to let the whole beans dry, pick out and discard the seeds, pound the pods thoroughly, and mix with cold or warm water; the dish is eaten as mush, without boiling.

Regarding roots and bulbs the San Carlos people know but little. They eat, however, raw or cooked, the small onion-like or radish-like bulb of the *chil-chi* (Dichelostemma, var. Brodiaca, capitata pauciflora), which is very common on the gravelly bluffs and plains of the San Carlos reservation. These are eaten in the spring, by persons of all ages. Having collected a supply of these bulbs, the writer, with Captain Kelley, the agent of the reservation, cooked them with salt and butter, finding them somewhat glutinous, but agreeable to the taste and also, apparently, quite nutritious and without unpleasant after effects. The plant has a blue flower which is also eaten raw.

The leaves of a small plant known as *i-tán* are used as greens. They are eaten raw, or are chopped up, mixed with a little fat and salt, and boiled.

Of berries, the San Carlos Apache eat those of the *sas'-chil* ("soft wood:" Canotia holocantha), and also sometimes the small black berries that grow on a bush in the valleys known as *chi-ln-tlézh;* those of a bush known as *chin-ko-ja*, growing in the mountains; and finally, though now but rarely, the juniper berries. The red berries of the *chin-ko-ja* are washed and then crushed and dried. For use as food, they are ground, stirred with water, and drunk, or eaten as thin mush. The mixture is said to look much like broken-up canned tomatoes, but tastes much better. It is reputed to be a good food for sick persons. The juniper berries are boiled and eaten without seasoning.

Acorns are used as food but little; those from the scrub oak are preferred to others. They are ground, mixed with chopped-up boiled meat and soup, and thus eaten. The mixture is said to be "very good." Piñon nuts, when ripe, are gathered in quantities and eaten raw or roasted; black walnuts, which are somewhat smaller than those of the eastern United States, are eaten raw.

Of seeds the San Carlos people sometimes use the *kloh-tzo* and the *nap-tzi*, samples of which were not obtainable.[a] The *kloh-tzo* is said to look much like rye, but is smaller; the grass from which it is obtained grows in the mountains where pines are found. The seeds after being ground are boiled for a short time, and the mixture is then eaten with a little salt, like mush. The *nap-tzi* is also the seed of a grass that grows in the mountains. The seeds are roasted and well ground; hot water is then added and the mixture is eaten as mush.

The native foods of the Walapai are many. The writer collected a number of samples (now in the American Museum of Natural History), but these do not include all that are used, for, at the time of his visit, no specimens of a few varieties could be found. Specimens of the following or data concerning them were found:

Ke-th-pi-la, a grass appearing early in summer in the mountains. The seeds are called *iat*. The women gather these seeds and save them in bags for future use. To make them ready for use the seeds are parched, and ground on the metate; they are then eaten, after being stirred in cold water into a mush; or more water is added and the mixture after being well stirred is drunk.

M'-nat is a species of yucca, the same whose brownish root is used in basketry. The plant has a greenish fruit, from which the Walapai prepare a kind of dried molasses. The women roast the fruit to a certain extent on coals, then break it open, pick out and throw away the seeds, pound the pulp on stones, and spread it on grass in the sun. After the mass has lain in the sun for a day or two it forms large cakes, as much as a yard in diameter; these are folded and preserved as they are, or are roasted more and then stored away. The cake is called *m'-na-ta-la-va*. The Walapai eat this as it is or cooked more; at times they drink an infusion of it. The taste of the half-dried *m'na-ta-la-va* is quite pleasant and preferable to that of the somewhat similarly prepared cactus cakes farther south; in whatever form it is consumed it has no ill effects.

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[a] Some of the plants here mentioned it was not possible to obtain at the season when the writer visited the reservation, while others were obtained, but, being without foliage and flowers, could not be identified.

Mesquite beans, or *tzi-mu-kui-la*, are used extensively as food. The pods are crushed on the metate, mixed with water and a little salt, and the whole is drunk or eaten. The beans also are occasionally used, being crushed and eaten as mush. No bread is made from either pods or beans.

The *tuña*, or prickly pear, the fruit of the ordinary broad-and-flat-leaved cactuses, is collected, peeled, split, freed as much as possible from the seeds, and spread upon the grass for drying, like peaches. When well dried it is usually pounded and broken into smaller pieces, and thus preserved. In this form the fruit is called *h-te′*, or *he-te′*. Before being eaten it is soaked in water, the mixture afterwards being stirred. Occasionally the *he-te′* is eaten as it is; it is never cooked.

A-a, or *a-ag*, is the fruit of the gigantic cactus, a variety closely related to the more southern pitahaya. Most of this fruit is consumed fresh, but some is peeled, then crushed and allowed to dry. It is eaten fresh or dried and generally without further preparation. Occasionally the dry fruit is soaked in water to make a pleasant-tasting drink.

E-m-tak is the seed of a certain grass which grows in the mountains. The seed is gathered during the summer. The women roast it in baskets by mixing it with hot charcoal; they then crush it on the metate. After adding water the mixture is eaten in the form of mush or whey.

E-iat, or *i-iat*, is a berry, the fruit of a low bush that grows in the valleys. It is gathered in summer. The women spread it on a clean exposed place, and leave it for a week or ten days in the sun to dry. In this form it is tied up in muslin and kept. Before being eaten the dried berries are moistened, crushed, and mixed with cold water. Sometimes, however, they are eaten dry.

Me-chir-k, or *me-chir-ke*, is the seed of a bunch grass, which grows to about 2½ feet in height, in the mountains. The seed is roasted with charcoal, crushed on the metate, boiled, and eaten with the addition of a little salt, as mush.

Ke-the-e′ is a red berry which grows on a bush whose stems are used in basketry. The berries are first dried in the sun on the ground. For use as food, they are crushed, mixed with water, sweetened with mescal or sugar, and eaten in a more or less liquid state.

S-le is the seed of a grass growing in the valleys in bunches to about 1 foot in height. The seed is gathered in summer. It may be eaten either raw or roasted. After being crushed on the metate it is boiled, and eaten as mush; or it is roasted, crushed, and eaten mixed with water.

Wi-yal, or *mescal;* similar to plant known under the name elsewhere, though the species is undetermined. The Walapai dig large holes in the ground in which they make fires of wood. While this is burning stones are thrown in; these are allowed to remain after the fire burns out. After being cleaned, the mescal is placed in the holes and covered with grass and earth; here it is left usually two days and nights.

E-kho is the piñon nut. These nuts are eaten either raw or roasted, like peanuts.

The Pima plant pop corn, having learned to do so, they say, long ago from the Mexican Indians. They roast the pop corn in a pot and add salt.

Pinole is prepared in a simple manner by roasting and grinding. Nothing is mixed with it until the pinole is to be eaten, when some add salt and others sugar.

The mesquite beans are still one of the most favored of the Pima native foods. They are dried in quantities and preserved in the storehouses. In preparing them for use as food they are crushed in a mortar and passed through a sieve; then the women line baskets with clean cloths on which are placed successive layers of the powdered beans, each layer being sprinkled with water. When the baskets are filled a piece of cloth is tied over the top of each which is then set out over night. The mass cakes together, and can be kept for an indefinite time without becoming spoiled or wormy. It is eaten without further preparation, and is much liked. The Pima also make a sort of dough out of the fresh pounded mesquite beans, which is cooked in the form of round cakes.

Another very popular food is prepared by roasting and grinding ordinary corn and mixing the meal with the juice obtained by putting crushed mesquite beans into cold water which is then brought to the steeping point. The Pima also drink the mesquite bean juice; "it makes them well."

The screw-bean, *ku-u-dje* (Prosopis odorata, Prosopis pubescens), which grows in profusion along the Gila, is also utilized. The beans are gathered and dried in the sun. For food they are pounded up in a mortar and the meal mixed with cold water is left to stand for five or ten minutes; the liquid is then squeezed into another vessel and used as a drink.

Mescal, which is not found in the immediate neighborhood, is used but seldom; it is baked in the usual manner.

As to cactus fruits, that of the saguaro is eaten in smaller quantities than among other tribes, the plant being less common. The sirup of the fruit is much liked.

The fruit of a Cylindriopuntia, growing on the flats near Sacaton, is used as food to a limited extent, and the same is true of that of the *a-a-dji-naf* ("slender cactus:" Opuntia leptocaulis). These small fruits are eaten raw, the seeds being thrown out.

The *biznaga* cactus, known by the Pima as *tsa-ult,* also serves occasionally as food. The top is removed and the inside pulp is sliced and cooked, usually together with the pods of the mesquite beans; the combination is said to be very agreeable to the taste.

Still another variety of cactus fruit used is that of the *há-na-mi,* one of the largest of the Opuntias. The rather small, yellowish, somewhat acid fruit is collected by the Pima as well as by the Papago, dried and stored for future use. In gathering it women employ two pieces of saguaro ribs tied together like thongs; they clean off a suitable space on the ground where, with the aid of branches from nearby bushes, the fruit is rolled about the sand until all the spines are removed. A hole is then dug in the ground, into which are put stones; on these a fire is built, and when the hole is thoroughly heated the ashes are removed, some of the hot stones being allowed to remain. It is then lined with fresh *chu-hch-kun-ek* (Dondia suffrutescens), and the cactus fruit is put in and covered with the same plant; on this are laid the remaining hot stones, and the whole covered with earth is left over night. The next day the fruit is taken out and dried; it can then be kept indefinitely. When it is to be eaten it is boiled with *ohpon* leaves, salted, and taken with pinole.

The *há-na-mi* is also cooked in pots and eaten with the addition of a plant known as *on-ka-wa-ne;* in this case the juice is extracted and not used.

Hó-wich is the fruit of a yucca (probably Yucca schottii; Palmer speaks of it as Y. baccata) growing in the mountainous parts of the Papago country and used by both the Papago and the Pima as food. The fruit is brought by the Papago and sold to the Pima in a dried state. It looks somewhat like bananas halved and dried, and even in the raw state is sweet and agreeable. It is ordinarily eaten cooked, with the addition of white flour; but it is also eaten raw.

Of berries the Pima relish those of the *u-us dji-wuht-paht* (Condalia obovata), a bush growing along the lower Gila. These black berries are eaten raw by the Pima, and also by the Maricopa, roasted, or sirup is made from them. When eaten raw the solid parts are thrown away. The roasting is done in a frying pan and the berries are then eaten without additions. To make sirup the women cook and strain the berries, boiling the juice to the desired consistency. The sirup is used on bread or otherwise, as in the case of saguaro sirup or honey.

The *kwa′-wuh-le* (Lycium fremontii), a bush growing along the Gila and on the low slopes of the neighboring hills, bears red berries which the Pima gather and cook in pots, the mixture being eaten either warm or cold, generally with the addition of sugar.

Only one native bulb is used as food. It is the *eix′-ko-we* ("underground-bulb:" Hoffmansegia stricta), a small bulb, nearly black on the surface, which is dug out of the ground with considerable labor.

It is boiled and eaten without additions. Occasionally the bulb is eaten raw, but consumed in that state in quantity it may give rise to "sickness of the stomach."

A number of native seeds are used as food in case of want. Like all the other Indians the Pima eat roasted squash seeds. The people say that in former times they cultivated a certain plant for its seeds, which they used as food. The name of the plant was *khof* or *kopf* (as pronounced by different individuals). It had big pods, with many small seeds somewhat like those of the saguaro in color and size. This seed was roasted, ground, and eaten like mush.

U-u-tam (Atriplex lentiformis) is a bush growing near the Gila. The seeds are gathered and pounded up in a wooden mortar, the bran being blown away. The mass is then placed on the inside bark of the cottonwood, laid in a heated hole in the ground and covered with more cottonwood bark, all being overlaid by grass or brush. It is allowed to remain thus for two days, when the meal is taken out, mixed with water, and eaten as mush with the occasional addition of salt.

Th-tan is a bush growing in the Gila valley; the seeds are roasted, ground, cooked, and eaten as mush.

Another seed used for food is that of a plant known as *řú-u-waht* (Sophia pinnata). It is parched, ground, and eaten mixed with cold or hot water.

Both the Pima and Papago use as food the seed of a grass known as *show-ou-wat.* The grass is gathered and rubbed on the concave part of a basket so that the seeds come out. These are thrown up and down, causing the bran to fly off into the air. The seeds are then ground and put into cold water and sugar is added; the liquid is used as a drink. The Papago use it much in summer, saying it cools them off.

Tá-hapk ("smooth") is a kind of grass which has small black oblong seeds used as food by both the Pima and the Papago. They are prepared like the seeds of the *show-ou-wat.*

The Pima used to eat also the seeds of the ironwood (Olneya tesota). As these seeds are bitter, it was the custom to put them into deep baskets which were hung overnight, each from four poles, in a swift current in the river. In the morning the seeds were dried and then preserved for future use. Before being eaten the seeds were roasted, and ground coarse. Another way of preparing these seeds was to grind them coarse, putting the meal into a clean hole in the sand near the river; here water was poured over the meal for a long while until all the bitterness was washed away. The final preparation and mode of eating the seeds were the same in both cases.

Of greens, the Pima use the *onch-ki-ie-wak* ("salt green"), a plant growing in the spring along the Gila. The leaves are cooked without seasoning or other addition, and the water is pressed out. Meantime there have been roasted and ground together some small beans and maize; these are mixed with the leaves and thus eaten. Sometimes the greens are eaten with pinole or with the cooked fruit of the *hánami*.

Djeh-t-ka-tak (Amsinckia tesselata) is a plant which grows near the Gila. The young leaves are eaten raw without preparation.

Ni′-a-tam (Malva borealis) is another plant growing in the Gila valley, the fresh leaves of which serve the Pima as food. The leaves are cooked, mixed with white flour, again cooked, and eaten without further preparation.

Oh′-pon (Chenopodium?) is a low spreading plant which grows in abundance near the Gila all along the Pima reservation. The green tops are boiled by the Indians and when cooled are drained, mixed with lard and occasionally with salt, and eaten with tortillas; sometimes the green tops are chewed raw.

Chu-hu-ki-ia is a small plant the leaves of which the Pima use for food in the fall. They usually eat them cooked, with the addition of salt, in the same way as spinach, but occasionally they chew the leaves raw.

Of *chrt′-qu-a-tak* (Amsinckia spectabilis) the part used is the young leaves, which are eaten raw. They are rolled into a ball, chewed, and swallowed.

In the case of *mo-o-tatřk* (Orobranche multiflora), the entire plant is used for food. It is somewhat bitter. The Pima eat it cooked without the addition of salt or sugar or other substance.

Of *sé-wi-je* (canaigre: Rumex hymenosepalus) a common plant in the Gila valley, the Pima used to eat the stalks. They cooked these in pots, or roasted them in the ashes; then, after peeling them, they ate the inside. The root is often chewed by the children, and is also used medicinally in the tribe.

Chu-hch-kun-ek ("black salty:" Dondia suffrutescens), a small bush growing along the Gila, is considered poisonous. Nevertheless, as mentioned before, the Pima use the leaves and stalks to line the holes in which they roast the fruit of the *hánami* cactus. The purpose of lining the holes with this plant is to give the cactus fruit a salty taste and also to keep up a moist heat.

Another of the native foods of the Pima is the honey of the wild bees; it is, however, obtained but seldom. A favorite sweet of the Pima children is the honey which a small solitary bee deposits in mud cells in the ground.[a] The bee digs a tunnel about 6 inches long below the surface of the ground, and there makes one, two, or even three little jars of mud, in which it secretes a thick, sweet, yellowish juice. The children dig for these little "jars" and eat the honey. They call it *mó-wa-li chuh-nie* ("fly sirup").

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[a] According to Dr. Wm. H. Ashmead, of the National Museum, who was shown a specimen, the cell or pocket is made by a species belonging to the family Authophoridæ, probably of the genus Authophora, or Melissodes; without the bee itself the species could not be definitely identified. These bees store up honey and pollen, pleasant enough to taste, in their clay cells, never pure honey alone.

Chewing gum: Various vegetal substances are chewed by the Indians of most tribes. Among the Pima in the early spring everybody, the children in particular, chews the cottony substance from the inside of the *a-uh-pa ha-vu-po-le-tek* ("cottonwood-berries," the buds of Populus fremontii wislizeni). Often this is mixed with a little raw tallow "to make it chew longer." It is used partly for the little sweetness which it contains, but mainly because it affords long chewing. The use of the root of the *sé-wi-je* (Rumex hymenosepalus), chewed much by the school girls, has already been mentioned. A variety of chewing gum is obtained from the *to-havs* (Encelia farinosa), growing in the hills. This plant has numerous stalks, which reach about 20 inches in height. On some of these stalks appear small quantities of amber-colored gum, which is gathered by the Indians and chewed as it is. It has but little taste, but otherwise possesses the characteristics of the ordinary chewing gum. The juice is not swallowed; it is said that this would cause poisoning, though not fatal in its effects. The best chewing gum is said to be made from a plant known as *wi-i-pam* ("gum"). This chewing gum is known as well by the Maricopa and the Papago living in the Gila valley as by the Pima. The plant is a vine which grows on fences in the fields. A variety of it known as *pan-o wi-i-pam* ("fox gum") grows in arroyos. The Indians obtain the milky juice from the tops of these plants or from their fruit. This is gathered in little vessels, from which are filled the hollow stalks of the pumpkin vine; these are then tied at both ends, and roasted for a few minutes in hot ashes, when the gum is ready for chewing. It is sweetish and harmless. The juice is swallowed. This chewing gum is much praised by the Indians, who say that it excels our commercial article.

The Maricopa use most of the native foods known to the Pima. Their pinole is made in the same way as that of the Pima; occasionally they add to it the Mexican panoche (crude sugar). The fruit of the saguaro is scarce in their country; that of *ku'-de-ep* (one of the Opuntias) is eaten raw; that of the *hánami*, known as *tat*, is dried, pounded, ground with wheat, and stirred with hot water into a thick mixture, and is eaten in this state. The Maricopa eat the same kinds of berries as the Pima, the black berry (Condalia obovata) being known as *u-é*, the red (Lycium fremontii) as *xtót*. The *ohpon* plant is also eaten, after being prepared by boiling with the addition of powdered cactus fruit (*tat*) and wheat; with this is drunk a mixture of pinole and water.

Ek-sé-we is a seed which looks much like that of alfalfa, but the two plants are not related. The Maricopa roast the seed in baskets with hot coals, and grind it fine; it is eaten mixed with water.

Among the Tarahumare a plant called *maquasávi* is dried and kept in jars; it is boiled with salt and eaten like spinach. Large quantities of mescal and pitaya fruits are consumed, and there are other wild fruits, berries, and nuts that are gathered in their seasons for food. When corn is scarce the people have recourse to the leaves of *nopal* (flat-leaved cactus) and the roots of *saravi*, or herba del oso. The flowers of the pines, the flowers and young leaves of the ash tree, a plant known as *chinaka*, leaves of beans and squashes, young maize, various seeds, roots, and other vegetal substances are eaten. Hartman[a] mentions chenopodium and the male flowers and young leaves of oak. In the summer months several varieties of mushrooms are gathered for food.

The mountain Yaqui, as well as the Tepehuane, Tepecano, Huichol, Cora, and some of the Tarasco, use, particularly in seasons of want, a large variety of native vegetal foods, including a great variety of wild fruits, roots, leaves, greens, and nuts, but among those of the Mexican Indians who live in proximity to the whites, as the lowland Yaqui, Opata, Pima, Aztec, Otomi, and others, the knowledge and utilization of these resources have greatly diminished. Most of the Mexican tribes were visited in the dry season, when collection of the food plants was impossible.

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[a] The Indians of North-Western Mexico, in *Congrès International des Américanistes*, Stockholm, 1894, 128. See also C. Lumholtz, Unknown Mexico, New York, 1902.

II. INDIAN CHILDREN OF APPROXIMATED AGES

TABLE 2. *Detail measurements: height, weight, head*

(*a*) **APACHE BOYS**

Record no.	(*a*) Height.	(*b*) Height (sitting.)	Height sub ischia (*a*–*b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
455	76.0	......	......	11.567	152	None	......	......	......	......	......	......	......
456	90.0	......	......	......	......	do	......	......	......	......	......	......	......
457	95.5	......	......	......	......	do	......	......	......	......	......	......	......
458	102.0	......	......	......	......	do	......	......	......	......	......	......	......
459	105.8	58.6	47.2	18.167	172	do	16.4	14.6	12.95	*89.02*	78.97	88.70	14.65
460	106.3	61.2	45.1	20.435	193	Considerable	(15.6)	(15.1)	(12.5)	......	......	......	14.40
461	106.4	61.5	44.9	21.795	205	Moderate	(17.1)	(14.7)	(13.2)	......	......	......	15.00
462	109.8	60.2	49.6	......	......	None	16.2	14.8	12.15	*91.36*	75.00	82.09	14.38
463	110.0	60.9	49.1	21.319	194	Considerable	(15.8)	(15.6)	(12.6)	......	......	......	14.67
464	112.6	62.8	49.8	22.703	202	None	17.1	16.1	12.9	*94.15*	75.44	80.12	15.37
465	114.6	64.6	50.0	23.587	206	Considerable	(15.7)	(14.8)	(12.5)	......	......	......	14.33
466	115.0	63.7	51.3	22.703	197	None	17.1	15.0	12.5	*87.72*	73.10	83.33	14.87
467	116.9	63.8	53.1	22.703	194	do	16.6	15.2	12.7	*91.57*	76.51	83.55	14.87
468	118.0	62.7	55.3	......	......	Moderate	(17.2)	(15.4)	(12.8)	......	......	......	15.13
469	119.7	65.6	54.1	24.948	208	None	17.1	14.6	12.7	*85.38*	74.27	86.99	14.80
470	119.8	66.9	52.9	23.610	197	Slight	(16.6)	(15.3)	(12.8)	......	......	......	14.90
471	120.3	64.9	55.4	......	......	None	17.5	15.0	12.9	*85.71*	73.71	86.00	15.13
472	123.0	64.9	58.1	26.309	214	do	17.7	15.2	13.65	*85.88*	77.12	89.80	15.52
473	123.3	70.8	52.5	28.577	232	do	16.9	14.6	12.4	*86.39*	73.37	84.93	14.63
474	123.7	68.0	55.7	30.414	246	do	17.4	15.0	12.7	*86.21*	72.99	84.67	15.03
475	124.1	68.5	55.6	27.692	223	Slight	(16.8)	(14.9)	(13.55)	......	......	......	15.08
476	125.5	70.3	55.2	29.507	235	Moderate	(16.8)	(14.8)	(12.65)	......	......	......	14.75
477	126.2	69.5	56.7	29.030	230	Considerable	(16.0)	(15.8)	(13.05)	......	......	......	14.95
478	126.7	70.0	56.7	29.053	229	Slight	(16.8)	(15.8)	(13.25)	......	......	......	15.28
479	127.2	69.3	57.9	30.414	239	None	17.6	15.0	12.35	*85.23*	70.17	82.34	14.98
480	127.3	70.6	56.7	32.659	256	Considerable	(15.9)	(15.4)	(12.5)	......	......	......	14.60
481	127.6	70.0	57.6	29.030	228	Slight	(17.5)	(15.3)	(13.2)	......	......	......	15.33
482	128.0	69.8	58.2	29.030	227	Moderate	(16.0)	(14.8)	(12.9)	......	......	......	14.57
483	128.1	69.1	59.0	30.414	238	None	16.2	15.4	12.5	*95.06*	77.16	81.17	14.70
484	128.4	67.9	60.5	27.692	216	do	17.0	14.6	12.45	*85.88*	73.24	85.28	14.68
485	128.5	69.6	58.9	29.938	233	do	18.0	15.4	13.2	*85.56*	73.33	85.71	15.53
486	128.9	70.8	58.1	29.484	229	Pronounced	(17.4)	(16.0)	(12.95)	......	......	......	15.45
487	129.1	70.2	58.9	27.239	211	None	17.2	15.0	12.75	*87.21*	74.13	85.00	14.98
488	129.1	71.8	57.3	29.960	232	Considerable	(16.4)	(16.2)	(13.0)	......	......	......	15.20
489	129.3	70.2	59.1	29.938	232	None	18.0	15.4	12.85	*85.56*	71.39	83.45	15.42
490	129.5	69.5	60.0	29.507	228	Moderate	(17.4)	(15.7)	(13.4)	......	......	......	15.50
491	129.8	69.6	60.2	33.566	259	Considerable	(16.7)	(15.6)	(12.6)	......	......	......	14.97
492	129.9	70.1	59.8	32.206	248	do	(17.3)	(15.8)	(13.05)	......	......	......	15.38
493	130.0	70.8	59.2	32.206	248	Moderate	(17.0)	(15.8)	(13.6)	......	......	......	15.47
494	130.4	71.3	59.1	34.474	264	Slight	(17.4)	(15.5)	(13.2)	......	......	......	15.37
495	130.5	70.1	60.4	......	......	None	17.4	15.0	12.7	*86.21*	72.99	84.67	15.03
496	130.7	72.0	58.7	31.321	239	do	17.7	16.0	13.15	*90.40*	74.29	82.19	15.62
497	131.0	70.3	60.7	29.938	228	Slight	(17.2)	(15.2)	(13.65)	......	......	......	15.35
498	131.2	67.4	63.8	29.030	221	None	17.1	14.8	12.6	*86.55*	73.68	85.14	14.83

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a*–*b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
499..	131.3	72.1	59.2	32.206	245	Moderate.....	(17.0)	(15.2)	(13.85)	......	......	......	15.02
500..	131.8	73.4	58.4	33.589	255	None.........	17.6	15.6	12.85	*88.64*	73.02	82.37	15.35
501..	131.8	73.1	58.7	31.321	237	Considerable..	(16.8)	(15.2)	(13.5)	......	......	......	15.17
502..	132.6	70.7	61.9	30.867	233	None.........	17.3	14.2	12.85	*82.08*	73.83	90.49	14.78
503..	132.6	72.2	60.4	31.752	239	Slight........	(16.8)	(15.6)	(12.65)	......	......	......	15.02
504..	133.0	72.6	60.4	31.298	235	.....do.......	(16.8)	(14.6)	(12.9)	......	......	......	14.77
505..	133.2	70.4	62.8	35.381	265	.....do.......	(17.1)	(15.0)	(13.35	......	......	......	15.15
506..	133.3	74.2	59.1	32.228	242	Moderate.....	(17.8)	(15.7)	(13.4)	......	......	......	15.63
507..	133.4	70.8	62.6	30.164	226	Slight........	(17.1)	(15.0)	(12.5)	......	......	......	14.87
508..	133.6	70.1	63.5	30.845	231	.....do.......	(17.2)	(14.7)	(13.15)	......	......	......	15.02
509..	133.9	72.4	61.5	35.857	268	None.........	17.5	14.7	13.0	*84.00*	74.29	88.44	15.07
510..	134.0	73.1	60.9	31.298	233	Moderate.....	(17.5)	(16.0)	(13.55)	......	......	......	15.68
511..	134.0	72.3	61.7	32.228	240	Considerable..	(16.8)	(15.4)	(13.65)	......	......	......	15.28
512..	134.5	73.0	61.5	32.682	243	Moderate.....	(16.5)	(15.5)	(12.85)	......	......	......	14.95
513..	134.6	72.7	61.9	29.484	219	Considerable..	(16.0)	(15.1)	13.05	......	......	......	14.72
514..	134.7	70.5	64.2	29.507	219	None.........	18.0	14.6	13.0	*81.11*	72.22	89.04	15.20
515..	135.2	72.9	62.3	33.113	245	.....do.......	16.8	14.7	12.8	*87.50*	76.19	87.07	14.77
516..	135.7	72.1	63.6	34.496	254	.....do.......	17.5	15.0	12.6	*85.71*	72.00	84.00	15.03
517..	136.0	73.1	62.9	34.474	253	Moderate.....	(17.4)	(15.3)	(12.75)	......	......	......	15.15
518..	136.4	72.7	63.7	37.649	276	Considerable..	(16.8)	(15.4)	(13.0)	......	......	......	15.07
519..	136.4	73.5	62.9	34.927	256	None.........	18.1	16.2	12.4	*89.50*	68.51	76.54	15.57
520..	136.5	71.8	64.7	31.752	233	.....do.......	17.2	15.0	13.3	*87.21*	77.33	88.67	15.17
521..	136.5	71.8	64.7	34.020	249	Considerable..	(16.6)	(14.7)	(12.25)	......	......	......	14.52
522..	136.8	73.4	63.4	32.228	234	None.........	17.1	15.1	13.0	*88.30*	76.02	86.09	15.07
523..	137.7	72.4	65.3	34.927	254	Moderate.....	(16.6)	(15.4)	(12.8)	......	......	......	14.93
524..	138.4	73.6	64.8	36.742	265	.....do.......	(16.6)	(15.4)	(12.8)	......	......	......	14.93
525..	138.7	75.8	62.9	38.556	278	.....do.......	(17.7)	(15.6)	(13.4)	......	......	......	15.57
526..	139.0	74.0	65.0	36.742	264	Slight........	(16.6)	(15.0)	(12.95)	......	......	......	14.85
527..	139.2	73.9	65.3	38.556	277	None.........	17.9	15.4	12.4	*86.03*	69.27	80.52	15.23
528..	139.7	75.7	64.0	38.102	273	.....do.......	17.5	15.4	13.05	*88.00*	74.58	84.74	15.32
529..	140.3	73.9	66.4	41.731	297	.....do.......	17.6	15.1	12.85	*85.80*	73.02	85.10	15.18
530..	140.8	74.8	66.0	36.311	258	.....do.......	16.8	14.8	12.75	*88.10*	75.89	86.15	14.78
531..	140.8	75.0	65.8	37.649	267	Considerable..	(17.3)	(16.3)	......	......	......	......	......
532..	140.8	75.0	65.8	37.915	268	.....do.......	(16.9)	(16.2)	(13.5)	......	......	......	15.53
533..	141.0	73.9	67.1	40.370	286	None.........	18.1	15.0	13.25	*82.87*	73.21	88.34	15.45
534..	141.2	75.8	65.4	37.649	267	Considerable..	(16.5)	(15.6)	(13.4)	......	......	......	15.17
535..	141.5	73.4	68.1	35.381	250	None.........	17.4	14.9	13.0	*85.63*	74.71	87.25	15.10
536..	142.0	72.5	69.5	38.102	268	.....do.......	17.8	15.3	12.7	*85.96*	71.35	83.01	15.27
537..	142.1	73.0	69.1	35.403	249	Slight........	(16.4)	(15.6)	(13.0)	......	......	......	15.00
538..	142.8	77.0	65.8	39.032	273	None.........	17.5	15.7	13.3	*89.71*	76.00	84.71	15.50
539..	142.8	73.0	69.8	39.010	273	Slight........	(17.5)	(15.2)	(13.1)	......	......	......	15.27
540..	143.0	74.2	68.8	37.218	260	None.........	17.1	15.3	12.75	*89.47*	74.56	83.34	15.05
541..	143.3	75.7	67.6	40.370	282	.....do.......	17.2	15.8	12.9	*91.86*	75.00	81.65	15.30
542..	144.9	72.4	72.5	39.939	275	Slight........	(17.9)	(16.1)	(13.0)	......	......	......	15.67
543..	144.9	78.2	66.7	41.731	288	Considerable..	(16.4)	(15.3)	(12.65)	......	......	......	14.78

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a*-*b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
544..	145.0	78.2	66.8	36.515	252	Slight........	(17.5)	(15.9)	(13.5)	....	....	....	15.63
545..	145.1	76.7	68.4	41.300	285	Moderate.....	(17.4)	(15.5)	(13.2)	....	....	....	15.37
546..	145.3	74.1	71.2	39.010	268	Slight........	(16.9)	(15.1)	(12.65)	....	....	....	14.88
547..	145.3	73.7	71.6	36.288	249	Moderate.....	(17.0)	(16.3)	(13.15)	....	....	....	15.48
548..	145.3	77.5	67.8	37.649	259	None	17.6	15.2	12.9	*86.36*	73.30	84.87	15.23
549..	145.4	77.0	68.4	38.556	265	Moderate.....	(17.7)	(16.1)	(13.35)	....	....	....	15.72
550..	145.6	76.8	68.8	40.370	277	Considerable..	(16.2)	(16.7)	(13.7)	....	....	....	15.53
551..	146.3	77.1	69.2	47.197	322	Moderate.....	(17.6)	(16.4)	(13.75)	....	....	....	15.92
552..	146.6	75.8	70.8	38.579	263	.....do........	(17.4)	(16.4)	(13.3)	....	....	....	15.70
553..	146.7	75.8	70.9	40.393	275	.....do........	(17.4)	(15.8)	(13.1)	....	....	....	15.43
554..	147.0	77.8	69.2	41.300	281	None	17.7	15.2	12.9	*85.88*	72.88	84.87	15.27
555..	147.3	75.9	71.4	35.834	243	Considerable..	(16.3)	(14.9)	(12.5)	....	....	....	14.57
556..	148.0	76.0	72.0	....	.....	None	16.8	14.7	12.6	*87.50*	75.00	85.71	14.70
557..	148.4	75.0	73.4	40.393	272	Slight........	(17.7)	(15.0)	(12.5)	....	....	....	15.07
558..	148.5	80.0	68.5	44.929	303	None	17.4	15.7	13.2	*90.23*	75.86	84.08	15.43
559..	148.5	77.2	71.3	43.568	293	Considerable..	(17.5)	(16.4)	(13.8)	....	....	....	15.90
560..	148.9	77.4	71.5	38.579	259	None	17.3	15.7	13.5	*90.75*	78.03	85.99	15.50
561..	149.3	76.4	72.9	43.568	292	Slight........	(17.5)	(15.4)	(13.4)	....	....	....	15.43
562..	149.7	78.1	71.6	45.360	303	Moderate.....	(17.8)	(16.2)	(13.6)	....	....	....	15.87
563..	149.8	79.8	70.0	42.638	285	Slight........	(17.1)	(15.7)	(13.75)	....	....	....	15.52
564..	149.9	78.4	71.5	42.185	281	None	17.7	15.2	12.8	*85.88*	72.32	84.21	15.23
565..	149.9	77.1	72.8	42.207	282	.....do........	17.3	15.0	13.4	*86.71*	77.46	89.33	15.23
566..	150.0	76.9	73.1	47.174	314	Considerable..	17.8	16.9	13.45	*94.94*	75.56	79.59	16.05
567..	150.4	76.8	73.6	43.546	289	None	18.6	15.3	12.8	*82.26*	68.82	83.66	15.57
568..	150.4	78.7	71.7	44.929	299	.....do........	17.7	15.9	12.85	*89.83*	72.60	80.82	15.48
569..	150.7	76.4	74.3	43.568	289	.....do........	16.9	15.2	13.0	*89.94*	76.92	85.53	15.03
570..	151.7	78.1	73.6	49.465	326	.....do........	17.6	15.5	13.15	*88.07*	74.72	84.84	15.42
571..	152.7	77.5	75.2	47.174	309	Moderate.....	17.6	16.6	13.7	*94.32*	77.84	82.53	15.97
572..	152.8	79.2	73.6	45.814	300	None	18.3	15.1	13.1	*82.51*	71.58	86.75	15.50
573..	152.9	81.5	71.4	45.836	300	.....do........	17.4	15.7	13.4	*90.23*	77.01	85.35	15.50
574..	153.2	82.2	71.0	44.906	293	Moderate.....	16.9	15.4	13.6	*91.12*	80.47	88.31	15.30
575..	153.3	81.5	71.8	44.453	290	None	16.7	15.1	12.9	*90.42*	77.25	85.43	14.90
576..	153.4	78.3	74.9	42.207	275	.....do........	18.2	15.8	13.25	*86.81*	72.81	83.86	15.75
577..	154.0	78.9	75.1	50.803	330	.....do........	18.7	15.6	13.5	*83.42*	72.19	86.54	15.93
578..	154.2	82.6	71.6	49.896	323	.....do........	17.8	15.0	13.4	*84.27*	75.28	89.33	15.40
579..	154.2	80.7	73.5	44.929	291	.....do........	17.4	15.6	12.8	*89.66*	73.56	82.05	15.27
580..	154.4	78.2	76.2	44.453	288	.....do........	17.3	15.2	13.25	*87.86*	76.59	87.17	15.25
581..	154.7	79.2	75.5	48.558	314	.....do........	18.4	16.2	13.9	*88.04*	75.54	85.80	16.17
582..	156.0	79.8	76.2	43.568	279	.....do........	18.1	14.2	13.25	*78.45*	73.21	92.96	15.18
583..	156.4	82.5	73.9	48.104	308	.....do........	17.4	16.0	13.3	*91.95*	76.44	83.13	15.57
584..	156.5	81.1	75.4	48.104	307	Slight........	(18.2)	(16.5)	(13.95)	....	....	....	16.22
585..	157.9	79.1	78.8	49.011	310	Considerable..	(17.4)	(15.6)	(13.15)	....	....	....	15.38
586..	158.3	83.3	75.0	48.104	304	None	18.2	15.3	13.75	*84.07*	75.55	89.87	15.75
587..	158.4	82.9	75.5	50.803	321	.....do........	17.3	15.4	13.0	*89.02*	75.14	84.42	15.23
588..	158.6	84.0	74.6	53.071	335	.....do........	18.1	15.7	13.5	*86.74*	74.59	85.99	15.77

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a*-*b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
589..	158.6	83.2	75.4	57.607	363	None........	18.0	16.1	13.3	*89.44*	73.89	82.61	15.80
590..	158.8	86.9	71.9	56.269	354	Slight........	(17.4)	(15.7)	(12.8)	......	......	......	15.30
591..	158.9	82.1	76.8	53.978	340	Moderate.....	(17.4)	(16.2)	(13.55)	......	......	......	15.72
592..	159.1	82.3	76.8	53.978	339	Considerable..	(17.3)	(16.2)	(13.55)	......	......	......	15.68
593..	159.4	83.1	76.3	51.710	324	None........	19.0	15.7	13.0	*82.63*	68.42	82.80	15.90
594..	160.5	85.9	74.6	53.071	331	.....do........	17.9	15.1	13.35	*84.36*	74.58	88.41	15.45
595..	160.5	87.5	73.0	57.176	356	.....do........	17.3	15.5	12.9	*89.60*	74.57	83.23	15.23
596..	161.2	86.1	75.1	60.782	377	.....do........	18.5	16.7	13.7	*90.27*	74.05	82.04	16.30
597..	161.3	85.9	75.4	57.154	354	Slight........	(17.4)	(16.9)	(14.05)	......	......	......	16.12
598..	161.4	81.1	80.3	57.607	357	.....do........	(18.7)	(16.4)	(13.7)	......	......	......	16.27
599..	161.5	84.9	76.6	56.723	351	None........	18.2	15.0	12.65	*82.42*	69.51	84.34	15.28
600..	163.4	85.3	78.1	54.455	333	.....do........	19.5	15.7	13.2	*80.51*	67.69	84.08	16.13
601..	163.6	84.4	79.2	55.793	341	.....do........	17.9	16.3	13.25	*91.06*	74.02	81.29	15.82
602..	163.7	84.3	79.4	53.094	324	.....do........	18.9	16.6	13.65	*87.83*	72.23	82.23	16.38
603..	163.8	85.5	78.3	53.071	324	.....do........	18.6	15.7	13.6	*84.41*	73.12	86.62	16.30
604..	164.3	87.7	76.6	58.991	359	Slight........	(17.6)	(16.1)	(13.3)	......	......	......	15.67
605..	164.5	86.4	78.1	63.050	383	Moderate.....	(18.3)	(16.5)	(13.85)	......	......	......	16.22
606..	164.7	82.8	81.9	56.723	344	None........	17.8	15.0	12.95	*84.27*	72.75	86.34	15.25
607..	164.8	86.6	78.2	58.968	358	Moderate.....	(17.8)	(16.4)	(13.85)	......	......	......	16.02
608..	165.0	89.1	75.9	59.875	363	Considerable..	(17.2)	(16.3)	(13.15)	......	......	......	15.55
609..	165.0	87.2	77.8	58.061	352	Slight........	(18.4)	(16.5)	(13.85)	......	......	......	16.25
610..	165.1	89.3	75.8	59.444	360	None........	18.3	15.4	13.5	*84.15*	73.77	87.66	15.73
611..	165.3	86.0	79.3	53.978	327	.....do........	17.8	15.3	13.2	*85.96*	74.16	86.27	15.43
612..	165.3	85.3	80.0	58.991	357	.....do........	18.0	16.4	13.4	*91.11*	74.44	81.71	15.93
613..	165.4	82.7	82.7	55.793	337	Moderate.....	(17.2)	(16.0)	(12.8)	......	......	......	15.33
614..	165.6	87.7	77.9	55.339	334	None........	17.7	15.6	12.8	*88.14*	72.32	82.05	15.37
615..	165.6	85.7	79.9	56.269	339	Considerable..	(17.5)	(16.5)	(13.4)	......	......	......	15.80
616..	165.7	87.1	78.6	58.991	356	None........	18.6	16.4	13.35	*88.17*	71.78	81.41	16.12
617..	165.8	86.1	79.7	57.607	347	.....do........	18.1	16.6	13.3	*91.71*	73.48	80.12	16.20
618..	165.8	88.5	77.3	62.597	378	.....do........	18.1	15.8	13.1	*87.29*	72.38	82.91	15.67
619..	165.8	85.6	80.2	59.898	361	Moderate.....	(17.7)	(16.5)	(12.8)	......	......	......	15.67
620..	166.2	88.0	78.2	60.805	366	None........	18.5	15.4	13.3	*83.24*	71.89	86.36	15.73
621..	166.3	86.0	80.3	58.968	354	Considerable..	(17.0)	(16.4)	(13.0)	......	......	......	15.47
622..	166.7	87.0	79.7	57.176	343	None........	17.2	16.0	12.8	*93.02*	74.42	80.00	15.33
623..	167.0	88.3	78.7	63.050	378	.....do........	18.8	16.4	13.45	*87.23*	71.55	82.02	16.22
624..	167.4	87.2	80.2	57.176	341	Moderate.....	(18.2)	(16.2)	(14.05)	......	......	......	16.15
625..	167.5	86.8	80.7	64.411	385	None........	18.0	15.6	13.75	*86.67*	76.39	88.14	15.78
626..	167.6	89.1	78.5	67.155	401	.....do........	19.7	16.4	13.7	*83.25*	69.54	83.54	16.60
627..	168.0	88.1	79.9	63.958	381	.....do........	19.5	17.2	13.9	*88.21*	71.28	80.81	16.87
628..	168.2	87.6	80.6	61.712	367	.....do........	18.0	15.8	13.5	*87.78*	75.00	85.44	15.77
629..	169.5	87.5	82.0	58.514	345	.....do........	18.3	15.7	13.75	*85.79*	75.14	87.58	15.92
630..	169.8	84.9	84.9	55.339	326	Moderate.....	(16.7)	(16.2)	(12.65)	......	......	......	15.18
631..	169.9	90.2	79.7	65.772	387	None........	18.9	16.5	13.75	*87.30*	72.76	83.34	16.38
632..	170.0	87.0	83.0	59.422	349	Moderate.....	(17.9)	(16.6)	(13.85)	......	......	......	16.12

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*a*) APACHE BOYS—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a–b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression.	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
633..	170.3	88.7	81.6	68.516	402	None.........	19.1	15.9	13.5	*83.25*	70.68	84.91	16.17
634..	170.4	88.5	81.9	58.514	343	.....do.........	18.4	16.2	13.1	*88.04*	71.20	80.86	15.90
635..	170.5	85.5	85.0	58.514	343	Considerable..	(17.4)	(15.9)	(13.0)	......	......	......	15.43
636..	170.7	87.6	83.1	60.329	353	Slight.........	(18.6)	(15.9)	(13.35)	......	......	......	15.95
637..	171.5	92.1	79.4	61.712	359	.....do.........	(17.4)	(16.2)	(13.15)	......	......	......	15.58
638..	171.8	89.7	82.1	....	.....	None.........	19.0	15.7	13.45	*82.63*	70.79	85.67	16.05
639..	172.0	89.6	82.4	66.226	385	.....do.........	18.5	16.3	13.9	*88.11*	75.14	85.28	16.23
640..	172.2	86.7	85.5	57.154	332	.....do.........	17.7	15.6	13.0	*88.14*	73.45	83.33	15.43
641..	172.4	88.0	84.4	73.937	429	.....do.........	19.5	15.5	13.7	*79.49*	70.26	88.39	16.23
642..	173.6	92.0	81.6	68.040	392	Slight.........	(18.3)	(16.4)	(14.2)	......	......	......	16.30
643..	173.7	87.7	86.0	59.875	345	Moderate.....	(17.9)	(16.1)	(13.25)	......	......	......	15.75
644..	173.8	87.2	86.6	58.537	337	None.........	18.5	15.8	13.55	*85.41*	73.24	85.76	15.95
645..	175.3	91.2	84.1	68.040	388	.....do.........	18.4	16.0	13.5	*86.96*	73.37	84.38	15.97

(*b*) APACHE GIRLS

646..	106.6	61.4	45.2	20.866	196	None.........	17.2	13.9	12.85	*80.81*	74.71	92.45	14.65
647..	108.2	59.6	48.6	19.051	176	Considerable..	(15.3)	(14.6)	(12.0)	......	......	......	13.97
648..	109.3	61.8	47.5	21.092	193	None.........	16.7	15.0	12.25	*89.82*	73.35	81.66	14.65
649..	110.2	62.1	48.1	19.505	177	.....do.........	16.6	14.3	12.35	*86.14*	74.40	86.36	14.42
650..	110.7	62.3	48.4	20.185	182	.....do.........	15.7	14.2	12.6	*90.45*	80.25	88.73	14.17
651..	111.8	62.1	49.7	22.453	201	.....do.........	16.8	14.6	12.45	*86.90*	74.10	85.27	14.62
652..	113.8	63.1	50.7	22.680	199	.....do.........	16.9	14.5	12.3	*85.80*	72.78	84.83	14.57
653..	114.7	64.1	50.6	22.680	198	.....do.........	16.7	14.7	12.35	*88.02*	73.95	84.01	14.58
654..	115.3	64.1	51.2	24.268	210	.....do.........	17.4	14.5	12.6	*83.33*	72.41	86.90	14.83
655..	116.1	64.8	51.3	24.041	207	.....do.........	16.7	14.8	12.3	*88.62*	73.65	83.11	14.60
656..	117.0	64.9	52.1	24.721	211	.....do.........	18.0	14.9	12.35	*82.78*	68.61	82.88	15.08
657..	117.3	66.6	50.7	24.268	207	Slight.........	(16.6)	(15.4)	(12.45)	......	......	......	14.82
658..	117.5	66.4	51.1	23.814	203	None.........	16.9	15.0	12.4	*88.76*	73.37	82.67	14.77
659..	118.3	65.3	53.0	23.814	201	Considerable..	(16.1)	(15.4)	(12.45)	......	......	......	14.65
660..	118.8	66.8	52.0	23.360	197	Slight.........	(16.7)	(15.4)	(13.05)	......	......	......	15.05
661..	119.4	65.9	53.5	23.587	198	Considerable..	(16.8)	(15.2)	(12.9)	......	......	......	14.97
662..	119.6	65.7	53.9	26.762	224	None.........	16.7	15.0	12.75	*89.82*	76.35	85.0	14.82
663..	120.2	64.4	55.8	22.907	191	.....do.........	16.9	14.5	12.2	*85.80*	72.19	84.14	14.53
664..	120.3	65.2	55.1	24.948	207	Considerable..	(16.1)	(15.1)	(13.05)	......	......	......	14.75
665..	120.7	69.4	61.3	28.599	237	Moderate.....	(16.6)	(14.8)	(12.95)	......	......	......	14.78
666..	120.8	66.5	54.3	25.855	214	Slight.........	(16.7)	(15.4)	(13.2)	......	......	......	15.10
667..	122.1	67.6	54.5	25.855	212	None.........	16.4	14.7	12.4	*89.63*	75.61	84.35	14.50
668..	122.7	65.3	57.4	26.082	213	.....do.........	16.3	14.5	12.0	*88.96*	73.62	82.76	14.27
669..	122.9	70.3	52.6	25.855	210	.....do.........	17.4	14.8	13.15	*85.06*	75.58	88.85	15.12
670..	124.2	66.7	57.5	25.778	208	Moderate.....	(16.0)	(15.3)	(12.85)	......	......	......	14.72
671..	124.2	67.2	57.0	25.402	205	Considerable..	(15.6)	(15.0)	......	......	......	......	......
672..	125.2	67.1	58.1	26.309	210	None.........	16.6	14.6	12.05	*87.95*	72.59	82.54	14.42
673..	125.3	66.9	58.4	26.309	210	Moderate.....	(17.0)	(14.4)	(12.2)	......	......	......	14.53

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a*–*b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
674 ..	125.6	69.0	56.6	29.030	231	None	16.4	15.0	12.55	*91.46*	76.53	83.67	14.65
675 ..	125.9	67.8	58.1	29.257	232	Slight	(16.9)	(15.2)	(12.8)	....	....	....	14.97
676 ..	126.0	68.3	57.7	31.752	252	.....do	(16.3)	(15.4)	(12.75)	....	....	....	14.82
677 ..	126.3	71.5	54.8	28.804	228	.....do	18.3	15.8	13.2	*86.34*	72.13	83.54	15.77
678 ..	127.2	67.7	59.5	28.804	226	.....do	17.2	14.8	12.8	*86.05*	74.42	86.49	14.93
679 ..	127.3	69.3	58.0	26.536	208	.....do	15.8	14.5	12.35	*91.77*	78.17	85.18	14.22
680 ..	127.4	71.3	56.1	28.123	221	Slight	(16.1)	(15.0)	(12.95)	....	....	....	14.68
681 ..	128.2	70.8	57.4	28.577	223	None	16.7	15.6	12.95	*93.41*	77.55	83.01	15.08
682 ..	128.3	70.9	57.4	32.659	255	Slight	(16.7)	(14.5)	(13.2)	....	....	....	14.80
683 ..	128.3	68.8	59.5	31.298	244	None	17.5	14.8	13.0	*84.57*	74.29	87.84	15.10
684 ..	128.7	69.8	58.9	25.878	201	.....do	16.1	14.3	12.6	*88.82*	78.26	88.11	14.33
685 ..	128.9	70.0	58.9	27.216	211	.....do	16.6	15.0	12.35	*90.36*	74.10	82.34	14.65
686 ..	128.9	70.4	58.5	28.804	284	Considerable..	(15.6)	(15.6)	(12.55)	....	....	....	14.58
687 ..	129.3	68.1	61.2	30.391	235	Moderate	16.7	15.3	13.05	*91.62*	78.14	85.29	15.02
688 ..	129.5	70.1	59.4	27.670	214	None	17.4	14.6	12.5	*83.91*	71.84	85.62	14.83
689 ..	130.1	68.7	61.4	32.659	251	.....do	17.0	14.6	12.1	*85.88*	71.18	82.88	14.57
690 ..	130.4	69.1	61.3	35.381	271	.....do	17.5	16.1	13.35	*92.0*	76.29	82.92	15.65
691 ..	131.4	71.8	59.6	32.206	245	.....do	17.3	15.7	13.1	*90.75*	75.72	83.44	15.37
692 ..	131.6	71.0	60.6	29.938	227	.....do	17.5	14.4	12.1	*82.29*	69.14	84.03	14.67
693 ..	131.6	68.7	62.9	29.711	226	.....do	16.2	15.0	12.35	*92.59*	76.24	82.34	14.52
694 ..	131.7	72.0	59.7	35.608	270	.....do	17.4	15.5	12.95	*89.08*	74.43	83.55	15.28
695 ..	131.8	71.0	60.8	30.867	234	.....do	16.8	14.5	12.30	*86.31*	73.21	84.83	14.53
696 ..	131.9	72.2	59.7	32.432	246	Considerable..	(15.8)	(15.6)	(12.55)	....	....	....	14.65
697 ..	132.7	72.1	60.6	31.072	234	None	17.4	14.7	12.6	*84.48*	72.41	85.71	14.90
698 ..	133.2	70.0	63.2	29.484	221	.....do	17.4	14.6	12.9	*83.91*	74.14	88.36	14.97
699 ..	133.6	70.5	63.1	31.298	234	.....do	17.4	15.0	12.75	*86.21*	73.28	85.0	15.05
700 ..	134.0	71.1	62.9	32.228	241	Considerable..	(16.8)	(16.5)	(13.7)	....	....	....	15.67
701 ..	134.8	71.5	63.3	30.845	229	None	16.6	15.3	13.15	*92.17*	79.22	85.95	15.02
702 ..	134.8	72.8	62.0	33.340	247	.....do	17.0	14.8	12.5	*87.06*	73.53	84.46	14.77
703 ..	135.3	72.3	63.0	32.206	238	.....do	17.7	14.7	12.9	*83.05*	72.88	87.76	15.10
704 ..	135.4	74.8	60.6	31.979	236	.....do	17.6	15.7	13.3	*89.20*	75.57	84.71	15.53
705 ..	135.5	75.5	60.0	33.566	248	Moderate	(16.3)	(15.2)	(13.4)	....	....	....	14.97
706 ..	135.6	74.8	60.8	34.474	254	None	16.5	15.1	12.55	*91.52*	76.06	83.11	14.72
707 ..	135.7	72.1	63.6	35.381	261	.....do	17.4	15.5	12.95	*89.08*	74.43	83.55	15.28
708 ..	135.9	74.1	61.8	35.403	261	.....do	16.3	15.0	12.75	*92.02*	78.22	85.0	14.68
709 ..	136.6	72.8	63.8	36.515	267	.....do	16.4	15.5	12.8	*94.51*	78.05	82.58	14.90
710 ..	136.6	74.2	62.4	34.474	252	.....do	16.6	15.0	13.0	*90.36*	78.31	86.67	14.87
711 ..	137.0	75.7	61.3	36.764	268	.....do	17.7	14.7	13.35	*83.05*	75.43	90.82	15.25
712 ..	137.1	76.2	60.9	33.566	245	.....do	17.2	14.2	12.35	*82.56*	71.80	86.97	14.58
713 ..	137.2	74.5	62.7	32.886	240	.....do	17.4	15.2	12.05	*87.36*	69.26	79.28	14.88
714 ..	137.3	73.8	63.5	34.474	258	.....do	18.1	14.7	12.55	*81.22*	69.34	85.37	15.12
715 ..	137.6	74.0	63.6	33.589	244	Moderate	(16.3)	(15.3)	(12.6)	....	....	....	14.73
716 ..	137.7	73.0	64.7	31.752	231	None	17.0	14.2	12.65	*83.53*	74.42	89.09	14.62
717 ..	138.0	73.8	64.2	29.711	215	.....do	17.0	15.0	12.5	*88.24*	73.53	83.33	14.83

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a–b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
718..	138.0	74.4	63.6	32.432	235	None.........	17.2	15.6	12.95	*90.70*	75.29	83.01	15.25
719..	138.1	71.8	66.3	33.135	240	Slight.........	(16.2)	(15.2)	(12.6)	......	......	......	14.67
720..	139.0	73.5	65.5	33.113	238	Moderate.....	(16.3)	(14.6)	(12.7)	......	......	......	14.53
721..	139.3	76.5	62.8	32.228	231	None.........	15.9	14.2	12.35	*89.31*	77.68	86.97	14.15
722..	139.7	74.2	65.5	34.020	244	.....do........	17.1	15.1	13.4	*88.30*	78.36	88.74	15.20
723..	140.0	76.7	63.3	40.370	288	.....do........	17.3	15.9	13.1	*91.91*	75.72	82.39	15.43
724..	140.2	75.0	65.2	31.752	226	.....do........	17.1	14.8	12.5	*86.55*	73.10	84.46	14.80
725..	140.2	77.2	63.0	41.731	298	.....do........	17.0	15.4	13.0	*90.59*	76.47	84.42	15.13
726..	140.7	73.2	67.5	32.659	232	.....do........	17.2	14.2	12.4	*82.56*	72.09	87.32	14.60
727..	140.7	73.9	66.8	36.288	258	.....do........	16.9	15.0	12.6	*88.76*	74.56	84.0	14.83
728..	140.9	74.8	66.1	34.247	243	Considerable..	(15.9)	(15.7)	(13.35)	......	......	......	14.98
729..	140.9	74.8	66.1	35.834	254	None.........	17.2	15.0	12.45	*87.21*	72.38	83.0	14.88
730..	141.0	75.9	65.1	34.700	246	.....do........	16.8	14.7	12.3	*87.50*	73.21	83.67	14.60
731..	141.0	77.6	63.4	38.125	270	.....do........	17.5	15.7	13.35	*89.71*	76.29	85.03	15.52
732..	141.6	77.0	64.6	36.742	259	.....do........	17.4	15.6	13.45	*89.66*	77.30	86.22	15.48
733..	142.0	77.7	64.3	44.906	316	.....do........	17.9	14.9	12.4	*83.24*	69.27	83.22	15.07
734..	142.0	75.4	66.6	39.486	278	Moderate.....	(16.2)	(15.7)	(12.3)	......	......	......	14.73
735..	142.2	75.8	66.4	39.917	281	None.........	17.8	14.8	12.85	*83.15*	72.19	86.83	15.15
736..	143.5	76.1	67.4	40.144	280	Considerable.	(16.7)	(15.4)	(12.9)	......	......	......	15.00
737..	143.7	75.7	68.0	40.824	284	None.........	18.0	15.8	13.1	*87.78*	72.78	82.91	15.63
738..	143.7	77.1	66.6	39.486	275	Moderate.....	(16.6)	(15.5)	(13.1)	......	......	......	15.07
739..	144.0	77.7	66.3	45.814	318	None.........	17.0	14.1	12.35	*82.94*	72.65	87.59	14.48
740..	144.2	......	......	36.742	255	.....do........	16.6	14.8	12.75	*89.16*	76.81	86.15	14.72
741..	144.2	75.8	68.4	34.474	239	Moderate.....	(16.5)	(15.4)	(13.05)	......	......	......	14.98
742..	144.5	76.8	67.7	35.154	243	None.........	17.4	14.2	12.3	*81.61*	70.69	86.62	14.63
743..	145.2	76.6	68.6	37.876	261	Slight.........	(17.1)	(15.7)	(12.95)	......	......	......	15.25
744..	145.2	75.1	70.1	35.834	247	None.........	17.3	14.6	12.25	*84.39*	70.81	83.91	14.72
745..	145.3	78.3	67.0	46.267	318	.....do........	17.3	15.1	12.4	*87.28*	71.68	82.12	14.93
746..	145.3	76.4	68.9	43.319	298	Slight.........	(17.2)	(15.3)	(12.6)	......	......	......	15.03
747..	145.3	79.5	65.8	47.401	326	None.........	17.2	15.2	12.6	*88.37*	73.26	82.89	15.00
748..	145.5	80.6	64.9	45.360	312	.....do........	17.7	15.2	12.9	*85.88*	72.88	84.87	15.27
749..	145.5	73.7	71.8	36.742	253	.....do........	17.8	15.0	12.55	*84.27*	70.51	83.67	15.12
750..	145.5	75.7	69.8	34.927	240	.....do........	17.5	15.0	13.15	*85.71*	75.15	87.67	15.22
751..	146.5	75.4	71.1	36.288	248	.....do........	16.6	15.4	12.85	*92.77*	77.41	83.15	14.95
752..	146.6	76.5	70.1	38.102	260	.....do........	17.4	14.7	13.3	*84.48*	76.44	90.48	15.13
753..	146.7	75.9	70.8	41.958	286	.....do........	17.7	15.1	12.9	*85.31*	72.88	85.43	15.23
754..	147.0	78.3	68.7	39.010	265	Moderate.....	(16.7)	(14.9)	(13.35)	......	......	......	14.98
755..	147.0	77.4	69.6	39.917	272	Slight.........	(17.6)	(15.9)	(13.2)	......	......	......	15.57
756..	147.3	78.3	69.0	47.651	324	None.........	17.6	14.3	12.8	*81.25*	72.73	89.51	14.90
757..	147.3	76.7	70.6	43.546	296	.....do........	17.9	15.2	13.25	*84.92*	74.02	87.46	15.45
758..	147.7	76.9	70.8	43.546	295	Slight.........	(17.2)	(15.4)	(13.05)	......	......	......	15.22
759..	148.0	79.5	68.5	41.278	279	None.........	17.8	14.5	12.55	*81.46*	70.51	86.56	14.95
760..	148.1	82.2	65.9	(54.455)	(368)	.....do........	17.0	15.1	12.85	*88.82*	75.59	85.10	14.98
761..	148.3	77.8	70.5	41.051	277	.....do........	16.7	14.7	12.3	*88.02*	73.65	83.67	14.57

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*b*) APACHE GIRLS—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a*–*b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
762..	148.3	77.1	71.2	47.174	318	None	17.8	15.3	12.1	*85.96*	67.98	79.08	15.07
763..	148.4	81.1	67.3	48.989	330	....do	18.8	15.4	13.05	*81.91*	69.42	84.74	15.75
764..	148.5	79.1	69.4	49.669	334	....do	18.3	15.4	14.2	*84.15*	77.60	92.21	15.97
765..	148.5	79.4	69.1	44.906	302	....do	17.7	15.3	......	......	......	......	......
766..	148.5	82.9	65.6	38.556	260	....do	17.6	15.2	13.0	*86.36*	73.86	85.53	15.27
767..	149.0	78.6	70.4	45.360	304	Slight	(16.4)	(15.0)	(13.3)	......	......	......	14.90
768..	149.0	79.1	69.9	51.710	347	None	16.7	15.3	12.8	*91.62*	76.65	83.66	14.93
769..	149.1	78.6	70.5	44.680	300	....do	17.7	15.7	13.5	*88.70*	76.27	85.99	15.63
770..	149.1	80.7	68.4	40.370	271	....do	17.7	15.9	12.75	*89.83*	72.04	80.19	15.45
771..	149.4	80.4	69.0	46.948	314	....do	17.2	14.2	12.35	*82.56*	71.80	86.97	14.58
772..	149.6	83.1	66.5	48.535	324	....do	17.3	15.4	12.7	*89.02*	73.41	82.47	15.13
773..	149.8	79.6	70.2	42.412	283	Moderate	(16.6)	(15.1)	(13.0)	......	......	......	14.90
774..	149.8	79.4	70.4	46.267	309	Considerable	(17.1)	(15.4)	(13.35)	......	......	......	15.28
775..	150.0	76.5	73.5	41.278	275	None	17.0	14.6	12.5	*85.88*	73.53	85.62	14.70
776..	150.0	81.2	68.8	43.319	289	Considerable	(16.4)	(15.0)	(13.2)	......	......	......	14.87
777..	150.2	80.7	69.5	44.453	296	None	16.4	14.8	12.0	*90.24*	73.17	81.08	14.40
778..	150.2	84.1	66.1	54.432	362	....do	17.6	15.9	13.65	*90.34*	77.56	85.85	15.72
779..	150.3	80.5	69.8	49.216	327	....do	17.2	15.5	12.2	*90.12*	70.93	78.71	14.97
780..	150.7	78.2	72.5	41.278	274	....do	16.3	15.5	12.8	*95.09*	78.53	82.58	14.87
781..	150.7	80.0	70.7	51.937	345	....do	17.1	15.0	12.55	*87.72*	73.39	83.67	14.88
782..	150.9	83.4	67.5	(61.009)	(404)	....do	18.3	16.2	12.7	*88.52*	69.40	78.40	15.73
783..	151.0	79.6	71.4	59.875	397	....do	16.9	15.4	12.85	*91.12*	76.04	83.45	15.05
784..	151.0	81.4	69.6	50.350	333	....do	17.4	15.7	12.95	*90.23*	74.43	82.49	15.35
785..	151.4	83.7	67.7	(38.556)	(255)	....do	17.6	15.9	13.55	*90.34*	76.98	85.22	15.68
786..	151.4	83.0	68.4	58.514	386	....do	17.4	15.4	13.55	*88.51*	77.88	87.99	15.45
787..	151.5	78.7	72.8	41.731	275	Slight	(17.4)	(14.8)	(12.95)	......	......	......	15.05
788..	151.6	81.1	70.5	54.886	362	....do	(17.4)	(15.5)	(13.05)	......	......	......	15.32
789..	151.7	82.8	68.9	58.514	386	None	17.4	15.4	13.5	*88.51*	77.59	87.66	15.43
790..	152.0	79.2	72.8	55.112	363	Slight	(17.3)	(16.2)	(13.2)	......	......	......	15.57
791..	152.0	82.0	70.0	51.937	342	None	17.7	15.7	13.3	*88.70*	75.14	84.71	15.57
792..	152.2	78.8	73.4	45.814	301	....do	17.6	14.9	13.4	*84.66*	76.14	89.93	15.30
793..	152.2	80.0	72.2	48.989	322	....do	17.4	15.4	12.5	*88.51*	71.84	81.17	15.10
794..	152.3	79.5	72.8	43.546	286	Slight	(17.6)	(14.6)	(13.0)	......	......	......	15.07
795..	152.3	82.6	69.7	54.001	355	....do	(17.4)	(15.5)	(12.9)	......	......	......	15.27
796..	152.4	81.3	71.1	50.803	333	None	17.0	15.4	13.8	*90.59*	81.18	89.61	15.40
797..	152.5	80.1	72.4	45.587	299	Slight	(17.2)	(15.5)	(12.85)	......	......	......	15.18
798..	152.6	81.0	71.6	57.380	376	None	17.6	15.0	12.45	*85.23*	70.74	83.00	15.02
799..	152.7	79.0	73.7	43.092	282	....do	17.3	15.1	12.6	*87.28*	72.83	83.44	15.00
800..	153.2	78.9	74.3	44.906	293	....do	18.1	14.2	12.6	*78.45*	69.61	88.73	14.97
801..	153.3	80.1	73.2	52.844	345	....do	17.6	15.4	13.05	*87.50*	74.15	84.74	15.35
802..	153.3	81.4	71.9	55.815	364	....do	18.2	14.9	13.2	*81.87*	72.53	88.59	15.43
803..	153.5	82.3	71.2	59.422	387	....do	17.9	15.5	12.75	*86.59*	71.23	82.26	15.38
804..	153.8	80.4	73.4	50.350	327	Slight	(16.5)	(14.8)	(12.6)	......	......	......	14.63
805..	154.1	82.0	72.1	48.762	316	None	17.5	14.4	12.45	*82.29*	71.15	86.46	14.78

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a–b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
806..	154.2	80.4	73.8	46.267	300	None	17.3	15.0	13.0	*86.71*	75.14	86.67	15.10
807..	154.2	84.1	70.1	52.391	340	.....do........	17.9	15.8	13.1	*88.27*	73.18	82.91	15.60
808..	154.2	84.2	70.0	50.350	327	Slight.........	(17.3)	(15.6)	(13.5)	....	....	....	15.47
809..	154.3	80.5	73.8	51.257	332	Moderate.....	(17.4)	(15.8)	(13.25)	....	....	....	15.48
810..	154.6	81.2	73.4	(65.545)	(424)	None	18.0	16.2	12.9	*90.00*	71.67	79.63	15.70
811..	154.6	81.1	73.5	53.298	345	.....do........	17.3	15.6	13.0	*90.17*	75.14	83.33	15.30
812..	154.6	82.8	71.8	61.463	398	.....do........	16.8	15.7	12.7	*93.45*	75.60	80.89	15.07
813..	155.0	83.9	71.1	58.061	374	.....do........	18.1	15.2	12.9	*83.98*	71.27	84.87	15.40
814..	155.0	82.6	72.4	50.372	325	.....do........	17.5	14.8	12.9	*84.57*	73.71	87.16	15.07
815..	155.3	82.0	73.3	57.607	371	Slight.........	(17.6)	(15.5)	(13.85)	....	....	....	15.65
816..	155.3	82.9	72.4	61.236	394	None	18.5	15.1	13.35	*81.62*	72.16	88.41	15.65
817..	156.0	86.3	69.7	58.061	372	.....do........	17.2	15.2	12.8	*88.37*	74.42	84.21	15.07
818..	156.1	84.2	71.9	55.793	357	.....do........	17.2	15.5	12.65	*90.12*	73.55	81.62	15.12
819..	156.3	85.3	71.0	46.948	300	Slight.........	(17.2)	(14.7)	(13.0)	....	....	....	14.97
820..	156.7	82.2	74.5	47.174	301	None	17.2	15.1	12.75	*87.79*	74.13	84.44	15.02
821..	157.0	84.8	72.2	50.803	324	.....do........	18.3	14.9	12.95	*81.42*	70.77	86.92	15.38
822..	157.1	81.4	75.7	48.535	309	.....do........	18.6	15.2	12.7	*81.72*	68.28	83.55	15.50
823..	157.3	82.2	75.1	50.803	323	.....do........	17.6	14.7	12.75	*83.52*	72.45	86.73	15.02
824..	157.6	85.5	72.1	46.721	296	.....do........	17.4	16.0	13.25	*91.95*	76.15	82.84	15.55
825..	157.8	85.0	72.8	63.958	405	.....do........	18.4	15.4	13.0	*83.70*	70.65	84.42	15.60
826..	158.0	83.0	75.0	48.762	309	.....do........	18.0	15.6	12.75	*86.67*	70.84	81.73	15.45
827..	158.3	85.1	73.2	53.071	335	.....do........	16.6	14.5	12.05	*87.35*	72.59	83.11	14.38
828..	159.1	84.1	75.0	57.154	359	Slight.........	(17.5)	(15.3)	(13.25)	....	....	....	15.35
829..	159.5	84.8	74.7	63.958	401	None	18.0	16.1	13.25	*89.44*	73.61	82.30	15.78
830..	159.7	83.2	76.5	....	.....	Considerable..	(17.5)	(16.0)	(13.3)	....	....	....	15.60
831..	159.7	82.0	77.7	51.257	321	None	16.6	15.7	12.75	*94.58*	76.81	81.21	15.02
832..	159.7	84.2	75.5	63.050	395	Slight.........	(16.9)	(16.1)	(12.8)	....	....	....	15.27
833..	160.0	84.8	75.2	58.061	363	None	18.0	15.3	13.3	*85.00*	73.89	86.93	15.53
834..	160.1	82.8	77.3	61.690	385	.....do........	17.9	15.4	13.1	*86.03*	73.18	85.06	15.47
835..	160.4	85.4	75.0	63.958	399	.....do........	17.3	15.4	12.7	*89.02*	73.41	82.47	15.13
836..	160.8	84.8	76.0	61.690	384	Moderate.....	(18.0)	(16.6)	(13.7)	....	....	....	16.10
837..	161.2	85.5	75.7	61.916	385	Slight.........	(17.2)	(15.3)	(13.45)	....	....	....	15.32
838..	161.2	84.9	76.3	63.958	397	None	18.0	15.8	13.5	*87.78*	75.00	85.44	15.77
839..	162.0	84.5	77.5	50.350	311	.....do........	17.6	15.4	13.1	*87.50*	74.43	85.06	15.37
840..	162.2	83.5	78.7	49.896	308	Considerable..	(17.5)	(16.4)	(13.3)	....	....	....	15.73
841..	162.3	82.9	79.4	(68.267)	(421)	.....do........	(17.9)	(15.3)	(13.1)	....	....	....	15.43
842..	163.5	83.8	79.7	56.473	345	None	17.4	15.9	13.55	*91.38*	77.88	85.22	15.62
843..	164.3	89.6	74.7	59.648	363	Moderate.....	(17.0)	(15.4)	(13.45)	....	....	....	15.28
844..	165.2	88.7	76.5	(74.844)	(453)	Slight.........	(18.4)	(15.6)	(13.5)	....	....	....	15.83
845..	165.3	84.6	80.7	58.514	354	None	17.5	15.1	13.4	*86.29*	76.57	88.74	15.33
846..	166.0	87.2	78.8	64.638	389	.....do........	17.5	15.6	13.45	*89.14*	76.83	86.22	15.52

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*c*) PIMA BOYS

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a–b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
81	87.0					None							
82	88.3					do							
83	88.3					do							
84	97.9					do							
85	100.2	55.5	44.7	14.515	145	do	16.4	13.1	12.0	*79.9*	73.2	91.6	13.83
86	100.3					do							
87	100.4					do							
88	103.9	58.2	45.7	19.051	183	do	18.1	13.6	12.5	*75.1*	69.1	91.9	14.73
89	104.4					do							
90	105.5	58.1	47.4	18.144	172	do	16.9	14.0	12.3	*82.8*	72.8	87.9	14.40
91	110.0					do							
92	111.5	60.8	50.7	19.505	175	do	17.2	14.2	12.85	*82.5*	74.7	90.5	14.75
93	111.8					do							
94	112.7	63.0	49.7	19.505	173	do	17.5	14.2	12.65	*81.1*	72.3	89.1	14.78
95	113.8	63.7	50.1	22.226	195	do	17.7	13.6	12.8	*76.8*	72.3	94.1	14.70
96	115.3					do							
97	115.4	64.3	51.1	20.866	182	do	18.2	14.1	13.2	*77.5*	72.5	93.6	15.17
98	117.2					do							
99	119.0					do							
100	120.2	66.2	54.0	24.494	204	do	18.2	14.2	12.9	*78.0*	70.9	90.8	15.10
101	120.6					do							
102	122.0					do							
103	122.0					do							
104	122.4					do							
105	124.6	66.0	58.6	26.762	215	Slight	(17.3)	(14.4)	12.85				14.85
106	125.3	67.7	57.6	26.082	208	None	17.1	13.7	12.35	*80.1*	72.2	90.1	14.38
107	126.5	68.1	58.4	25.175	199	do	17.7	13.8	12.8	*77.9*	72.3	92.7	14.77
108	126.7	69.5	57.2	31.979	252	do	17.6	14.5	12.45	*82.4*	70.7	85.9	14.85
109	126.8	68.4	58.4	27.257	215	do	17.4	14.5	12.85	*83.3*	73.8	88.6	14.92
110	127.3	68.2	59.1	26.309	207	do	17.6	14.1	12.85	*80.1*	73.0	91.1	14.85
111	127.4	69.5	57.9	26.762	210	do	18.3	14.1	13.1	*77.0*	71.6	92.9	15.17
112	128.0	67.8	60.2	30.391	237	do	18.0	14.1	13.05	*78.3*	72.5	92.6	15.05
113	128.3	66.4	61.9	25.628	200	do	17.1	14.2	13.0	*83.0*	76.0	91.5	14.77
114	128.4	67.7	60.7	29.938	233	do	17.6	13.8	12.9	*78.4*	73.3	93.5	14.77
115	128.4	70.3	58.1	30.164	235	do	17.9	13.8	12.7	*77.1*	70.9	92.0	14.80
116	128.7	68.4	60.3	27.896	217	do	17.7	13.9	13.3	*78.5*	75.1	95.7	14.97
117	128.7	69.0	59.7	31.525	245	do	17.3	13.8	12.55	*79.8*	72.5	90.9	14.55
118	131.0	70.1	60.9	30.845	235	do	17.3	14.4	13.2	*83.2*	76.3	91.7	14.97
119	131.2	69.8	61.4	29.484	225	Slight	(17.1)	(14.4)	12.55				14.68
120	131.5	71.4	60.1	31.525	240	None	17.9	13.8	13.1	*77.1*	73.2	94.9	14.93
121	132.3	71.0	61.3	32.432	245	do	17.4	13.8	12.6	*79.3*	72.4	91.3	14.60
122	132.8	70.9	61.9	30.845	232	do	17.4	13.8	13.2	*79.3*	75.9	95.6	14.80
123	133.3	71.7	61.6	33.113	248	do	18.6	13.6	12.6	*73.1*	67.7	92.6	14.93
124	134.2	71.2	63.0	32.886	245	do	18.5	14.1	13.45	*76.2*	72.7	95.4	15.35
125	134.3	71.1	63.2	30.845	230	do	18.0	13.5	13.65	*75.0*	75.8	101.1	15.05

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*c*) **PIMA BOYS**—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a-b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*m.*	*cm.*				
126...	134.8	71.0	63.8	34.020	252	None.........	17.6	13.8	13.25	*78.4*	75.3	96.0	14.88
127...	135.3	70.4	64.9	30.845	228	.....do........	18.4	14.3	13.3	*77.7*	72.3	93.0	15.33
128...	135.3	72.8	62.5	33.340	246	.....do........	18.1	13.4	13.2	*74.0*	72.9	98.5	14.90
129...	135.4	69.9	65.5	33.566	248	.....do........	16.8	14.1	12.55	*83.9*	74.7	89.0	14.48
130...	135.6	70.5	65.1	31.525	232	.....do........	18.7	13.8	13.2	*73.8*	70.6	95.6	15.23
131...	135.6	71.0	64.6	32.886	243	.....do........	18.4	13.8	13.5	*75.0*	73.4	97.8	15.23
132...	135.7	71.5	64.2	31.525	232	Flattened.....	(17.5)	(15.2)	(13.45)	......	......	....	15.38
133...	135.8	71.1	64.7	33.340	245	None.........	18.1	14.0	12.6	*77.3*	69.6	90.0	14.90
134...	136.3	71.8	64.5	32.432	238	.....do........	18.1	12.7	12.9	*70.2*	71.3	101.6	14.57
135...	136.4	71.3	65.1	31.752	233	.....do........	18.4	14.4	13.7	*78.3*	74.5	95.1	15.50
136...	137.3	72.3	65.0	36.288	264	.....do........	18.2	13.4	12.65	*73.6*	69.5	94.4	14.75
137...	137.4	71.6	65.8	33.340	243	.....do........	18.0	13.4	12.9	*74.4*	71.7	96.3	14.77
138...	137.8	72.7	65.1	34.927	253	Moderate.....	(18.4)	(14.8)	(13.8)	......	......	....	15.67
139...	138.2	73.0	65.2	31.752	230	None.........	18.2	13.3	13.25	*73.1*	72.8	99.6	14.92
140...	138.3	71.0	67.3	32.659	235	.....do........	18.1	14.3	12.85	*79.0*	71.0	89.9	15.08
141...	138.3	73.6	64.7	37.195	269	.....do........	18.9	13.5	13.7	*71.4*	72.5	101.5	15.37
142...	138.3	72.9	65.4	....	......	.....do........	17.8	13.3	12.5	*74.7*	70.2	94.0	14.53
143...	139.0	71.8	67.2	32.206	232	.....do........	17.9	13.7	....	......	......	....	......
144...	139.7	74.0	65.7	36.288	260	.....do........	19.2	14.4	13.65	*75.0*	71.1	94.8	15.75
145...	140.4	75.1	65.3	37.649	268	.....do........	18.6	13.6	13.1	*73.1*	70.4	96.3	15.10
146...	140.8	75.2	65.6	37.422	266	.....do........	18.6	14.2	13.45	*76.3*	72.3	94.7	15.42
147...	141.1	74.2	66.9	34.474	244	.....do........	18.4	13.6	12.7	*73.9*	69.0	93.4	14.90
148...	141.1	77.2	63.9	36.742	260	.....do........	18.5	14.6	13.3	*78.9*	71.9	91.1	15.47
149...	141.4	74.0	67.4	36.968	261	Moderate.....	(17.0)	(14.1)	(13.15)	......	......	....	14.75
150...	141.7	72.5	69.2	34.247	242	None.........	18.4	13.6	12.9	*73.9*	70.1	94.8	14.97
151...	141.8	73.0	68.8	34.927	246	.....do........	17.8	14.2	13.0	*79.8*	73.0	91.5	15.00
152...	141.8	74.3	67.5	38.556	272	Slight.........	(17.8)	(14.8)	12.9	......	......	....	15.17
153...	142.2	74.8	67.4	40.144	282	None.........	17.7	14.8	13.25	*83.6*	74.9	89.5	15.25
154...	143.2	76.2	67.0	40.370	282	.....do........	18.3	14.4	13.85	*78.7*	75.7	96.2	15.52
155...	143.5	76.7	66.8	37.422	261	.....do........	17.6	14.6	13.4	*82.9*	76.1	91.8	15.20
156...	143.7	78.1	65.6	38.329	267	.....do........	18.0	13.9	12.8	*77.2*	71.1	92.1	14.90
157...	144.3	75.2	69.1	38.329	266	.....do........	18.6	13.2	13.4	*70.9*	72.0	101.5	15.07
158...	144.7	75.0	69.7	34.020	235	.....do........	18.2	13.7	13.0	*75.3*	71.4	94.9	14.97
159...	145.0	76.7	68.3	33.566	231	.....do........	18.0	13.3	13.35	*73.9*	74.2	100.4	14.88
160...	145.2	74.5	70.7	37.876	261	.....do........	18.9	14.0	13.3	*74.1*	70.4	95.0	15.40
161...	145.4	75.3	70.1	40.370	278	.....do........	18.1	14.3	12.85	*79.0*	71.0	89.9	15.08
162...	146.1	74.7	71.4	37.649	258	.....do........	18.0	13.9	13.0	*77.2*	72.2	93.5	14.97
163...	146.7	76.4	70.3	38.783	264	.....do........	18.0	13.6	12.8	*75.6*	71.1	94.1	14.80
164...	147.3	77.8	69.5	44.453	302	.....do........	18.9	14.4	14.1	*76.2*	74.6	97.9	15.80
165...	147.4	73.4	74.0	36.742	249	.....do........	18.1	14.0	12.5	*77.3*	69.1	89.3	14.87
166...	147.8	77.1	70.7	44.453	301	.....do........	18.6	14.0	13.15	*75.3*	70.7	93.9	15.25
167...	148.6	79.3	69.3	46.040	310	.....do........	18.4	14.0	13.35	*76.1*	72.5	95.4	15.25
168...	148.6	77.0	71.6	46.267	311	.....do........	18.6	14.3	12.8	*76.9*	68.8	89.5	15.23
169...	148.9	77.3	71.6	44.906	302	.....do........	18.3	13.6	13.25	*74.3*	72.4	97.4	15.05
170...	149.1	77.0	72.1	42.412	284	.....do........	18.5	14.2	13.15	*76.8*	71.1	92.6	15.28

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*c*) **PIMA BOYS**—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a–b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
171	149.3	76.5	72.8	41.278	276	Slight	(17.5)	(14.4)	13.25	......	......	......	15.05
172	149.8	78.1	71.7	40.597	244	None	18.2	13.2	13.05	*72.5*	71.7	98.9	14.82
173	150.0	79.9	70.1	43.546	290	do	18.4	13.9	13.6	*75.5*	73.9	97.8	15.30
174	151.3	80.4	70.9	46.040	304	do	18.2	14.5	13.65	*79.7*	75.0	94.1	15.45
175	151.9	77.7	74.2	42.638	281	do	19.4	13.6	13.6	*70.1*	70.1	100.0	15.53
176	152.5	77.0	75.5	41.731	273	do	17.8	13.6	13.0	*76.4*	73.0	95.6	14.80
177	153.4	78.5	74.9	36.288	237	Considerable	(16.2)	(14.6)	(13.25)	......	......	......	14.68
178	153.8	80.8	73.0	47.174	307	None	17.5	14.4	12.65	*82.3*	72.3	87.8	14.85
179	154.3	80.8	73.5	46.721	303	do	17.8	15.5	13.55	*87.1*	76.1	87.4	15.62
180	155.0	80.3	74.7	46.267	298	do	17.9	14.7	12.95	*82.1*	72.3	88.1	15.18
181	155.6	80.8	74.8	42.412	273	do	19.1	13.5	13.35	*70.7*	69.9	98.9	15.32
182	155.7	82.0	73.7	51.257	329	do	18.6	14.3	13.1	*76.9*	70.4	91.6	15.33
183	156.0	79.9	76.1	46.721	299	do	17.6	13.6	12.4	*77.3*	70.4	91.2	14.33
184	156.5	84.7	71.8	55.339	354	do	18.6	14.7	13.5	*79.0*	72.6	91.8	15.60
185	157.0	82.8	74.2	48.762	311	do	18.0	13.5	12.85	*75.0*	71.4	95.2	14.78
186	158.2	81.1	77.1	47.174	298	do	19.0	13.9	13.5	*73.2*	71.0	97.1	15.47
187	159.3	87.0	72.3	62.824	394	do	19.4	14.6	13.05	*75.3*	67.3	89.4	15.68
188	159.3	87.8	71.5	62.597	393	do	18.4	14.5	13.35	*78.8*	72.6	92.1	15.42
189	159.5	81.6	77.9	55.112	346	do	18.5	14.4	13.25	*77.8*	71.6	92.0	15.38
190	159.5	84.9	74.6	56.927	357	do	18.8	14.2	13.75	*75.5*	73.0	96.8	15.58
191	159.9	82.5	77.4	51.937	325	do	18.2	14.2	13.5	*78.0*	74.2	95.1	15.30
192	161.3	86.5	74.8	59.648	369	do	18.1	14.4	13.35	*79.6*	73.7	92.7	15.28
193	161.5	87.1	74.4	59.648	369	Flattened	(17.6)	(15.2)	13.2	......	......	......	15.33
194	162.0	80.6	81.4	49.442	305	None	18.4	14.8	13.6	*80.4*	73.9	91.9	15.60
195	162.2	83.7	78.5	50.576	312	do	19.7	14.5	13.5	*73.6*	68.5	93.1	15.90
196	162.3	85.7	76.6	58.741	362	do	18.3	14.5	13.9	*79.2*	76.0	95.9	15.57
197	162.3	85.2	77.1	56.473	348	do	18.6	14.4	13.45	*77.4*	72.3	93.4	15.48
198	163.0	85.7	77.3	50.556	310	do	19.5	14.9	13.9	*76.4*	71.3	93.3	16.10
199	163.3	84.6	78.7	54.886	336	Slight	18.3	14.6	13.5	*79.8*	73.8	92.5	15.47
200	163.4	83.9	79.5	55.793	341	None	17.6	14.4	12.75	*81.8*	72.4	88.5	14.92
201	164.2	84.1	80.1	55.339	337	do	19.0	13.7	13.7	*72.1*	72.1	100.0	15.47
202	164.2	86.2	78.0	59.648	363	do	18.8	14.6	13.2	*77.7*	70.2	90.4	15.53
203	164.6	87.5	77.1	51.710	314	do	18.3	13.8	13.6	*75.4*	74.3	98.5	15.23
204	165.1	87.9	77.2	61.463	372	do	19.4	14.3	13.75	*73.7*	70.9	96.1	15.82
205	165.3	85.3	80.0	51.030	308	do	18.9	14.0	13.6	*74.1*	72.0	97.1	15.50
206	166.1	87.0	79.1	58.288	351	do	18.1	14.1	13.80	*77.9*	76.2	97.9	15.33
207	166.4	85.7	80.7	55.339	333	do	18.7	14.1	13.20	*75.4*	70.6	93.6	15.33
208	166.5	86.5	80.0	60.329	362	do	18.6	14.6	13.75	*78.5*	73.9	94.2	15.65
209	166.7	86.0	80.7	58.288	350	do	18.2	14.4	12.85	*79.1*	70.6	89.2	15.15
210	166.8	89.5	77.3	60.102	360	(?)	(16.9)	(15.2)	13.8	......	......	......	15.30
211	167.0	84.4	82.6	54.659	327	None	18.8	13.7	12.9	*72.9*	68.6	94.2	15.13
212	167.2	87.9	79.3	65.318	391	do	18.2	15.0	12.9	*82.4*	70.9	86.0	15.37
213	167.3	87.4	79.9	62.370	373	do	19.8	14.4	14.2	*72.7*	71.7	98.6	16.13
214	167.9	88.4	79.5	65.318	389	do	19.3	14.5	13.35	*75.1*	69.2	92.1	15.72
215	168.4	86.8	81.6	58.061	345	Slight	(18.4)	(15.3)	(13.8)	......	......	......	15.83

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*c*) **PIMA BOYS**—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a–b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
216 ...	169.5	89.6	79.9	60.782	359	None	18.3	14.8	13.55	*80.9*	74.0	91.6	15.55
217 ...	169.7	90.2	79.5	55.566	327	.....do	17.5	14.0	13.85	*80.0*	79.1	98.9	15.12
218 ...	169.7	90.3	79.4	62.597	369	.....do	18.5	14.6	13.85	*78.9*	74.9	94.9	15.65
219 ...	171.3	89.2	82.1	63.050	368	.....do	18.9	15.5	13.5	*82.0*	71.4	87.1	15.97
220 ...	172.0	92.6	79.4	68.040	396	.....do	18.2	14.5	13.85	*79.7*	76.1	95.5	15.52

(*d*) **PIMA GIRLS**

221 ...	87.4	......	......	....	......	None	......	......	......	......	......	......	......
222 ...	93.1	......	......	....	......	.....do	......	......	......	......	......	......	......
223 ...	93.9	......	......	....	......	.....do	......	......	......	......	......	......	......
224 ...	94.1	......	......	....	......	.....do	......	......	......	......	......	......	......
225 ...	97.3	......	......	....	......	.....do	......	......	......	......	......	......	......
226 ...	97.4	......	......	....	......	.....do	......	......	......	......	......	......	......
227 ...	99.1	......	......	....	......	.....do	......	......	......	......	......	......	......
228 ...	99.5	......	......	....	......	.....do	......	......	......	......	......	......	......
229 ...	107.5	......	......	....	......	.....do	......	......	......	......	......	......	......
230 ...	107.9	59.6	48.3	18.144	168	.....do	16.6	13.3	12.0	*80.1*	72.3	90.2	13.97
231 ...	108.8	......	......	....	......	.....do	......	......	......	......	......	......	......
232 ...	109.9	......	......	....	......	.....do	......	......	......	......	......	......	......
233 ...	110.2	61.2	49.0	19.051	173	.....do	16.5	14.4	12.9	*87.3*	78.2	89.6	14.60
234 ...	111.2	......	......	....	......	.....do	......	......	......	......	......	......	......
235 ...	112.7	......	......	....	......	.....do	17.9	13.4	......	......	......	......	......
236 ...	116.2	......	......	....	......	.....do	16.9	14.0	......	......	......	......	......
237 ...	116.7	62.6	54.1	20.412	175	.....do	17.3	12.7	12.3	*73.4*	71.1	96.8	14.10
238 ...	117.3	63.9	53.4	20.412	172	.....do	17.2	12.9	12.05	*75.0*	70.1	93.4	14.05
239 ...	117.3	......	......	....	......	.....do	......	......	......	......	......	......	......
240 ...	118.0	......	......	....	......	.....do	......	......	......	......	......	......	......
241 ...	119.0	......	......	....	......	.....do	......	......	......	......	......	......	......
242 ...	119.7	......	......	....	......	.....do	......	......	......	......	......	......	......
243 ...	120.1	66.0	54.1	25.855	215	.....do	17.1	13.8	12.9	*80.7*	75.4	93.5	14.60
244 ...	121.3	65.6	55.7	24.494	202	.....do	16.8	13.1	11.65	*78.0*	69.3	88.9	13.85
245 ...	121.3	64.7	56.6	25.402	209	.....do	16.9	13.3	12.2	*78.7*	72.2	91.7	14.13
246 ...	121.7	67.2	54.5	25.402	207	.....do	17.4	14.0	12.65	*80.5*	72.7	90.4	14.68
247 ...	122.2	67.4	54.8	25.402	208	Slight	(17.4)	(14.2)	(12.7)	......	......	....	14.77
248 ...	123.2	67.2	56.0	25.175	204	None	16.6	13.2	12.1	*79.5*	72.9	91.7	13.97
249 ...	124.3	66.7	57.6	23.587	182	.....do	17.3	13.4	12.55	*77.5*	72.5	93.7	14.42
250 ...	124.4	71.3	53.1	29.030	233	.....do	17.7	13.5	12.9	*76.3*	72.9	95.6	14.70
251 ...	125.4	65.5	59.9	27.670	221	Slight	(17.0)	(14.0)	(12.0)	......	......	....	14.33
252 ...	125.7	......	......	....	......	None.	16.7	13.7	......	......	......	......	......
253 ...	126.3	67.8	58.5	25.628	203	.....do	17.9	13.0	12.3	*72.6*	68.7	94.6	14.40
254 ...	126.9	69.3	57.6	26.309	207	.....do	17.8	13.3	12.35	*74.7*	69.4	92.9	14.48
255 ...	127.0	68.0	59.0	29.484	232	.....do	18.1	13.8	12.7	*76.2*	70.2	92.0	14.87
256 ...	127.7	68.3	59.4	25.402	199	.....do	17.3	13.4	12.3	*77.5*	71.1	91.8	14.33

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a–b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
257 ..	128.1	68.2	59.9	28.577	223	None	16.7	13.8	12.4	*82.6*	74.2	89.9	14.30
258 ..	128.1	68.7	59.4	29.257	228	Slight	(17.3)	(14.2)	(12.5)	......	......	....	14.67
259 ..	128.2	69.5	58.7	27.216	212	None	18.3	13.3	13.4	*72.7*	73.2	100.7	15.00
260 ..	128.7	67.6	61.1	27.216	211	.....do........	18.4	13.2	12.6	*71.7*	68.5	95.4	14.73
261 ..	129.0	......	......	....	....	.....do........	......	......	....	......	......	....	......
262 ..	129.4	68.0	61.4	25.855	200	.....do........	17.8	13.2	12.9	*74.2*	72.5	97.7	14.63
263 ..	130.3	72.3	58.0	30.391	233	.....do........	17.6	13.7	12.35	*77.8*	70.2	90.1	14.55
264 ..	130.5	69.4	61.1	30.618	235	.....do........	18.1	13.8	12.85	*76.2*	71.0	93.1	14.92
265 ..	130.6	71.7	58.9	32.206	247	.....do........	17.3	13.6	12.7	*78.6*	73.4	93.4	14.53
266 ..	131.3	......	......	....	....	.....do........	17.2	14.3	....	......	......	....	......
267 ..	131.3	69.8	61.5	35.834	273	.....do........	17.0	13.0	11.9	*76.5*	70.0	91.5	13.97
268 ..	132.0	......	......	....	....	.....do........	......	......	....	......	......	....	......
269 ..	132.3	70.4	61.9	28.577	216	.....do........	18.4	13.0	12.9	*70.6*	70.1	99.2	14.77
270 ..	132.6	69.3	63.3	29.938	226	.....do........	17.7	13.7	12.35	*77.4*	69.8	90.1	14.58
271 ..	133.3	69.5	63.8	29.030	218	.....do........	17.6	13.2	12.55	*75.0*	71.3	95.1	14.45
272 ..	133.3	......	......	....	....	.....do........	......	......	....	......	......	....	......
273 ..	133.6	70.3	63.3	29.938	224	.....do........	17.5	13.9	12.45	*79.4*	71.1	89.6	14.63
274 ..	133.8	70.7	63.1	33.113	247	.....do........	17.7	13.8	12.5	*78.0*	70.6	90.6	14.67
275 ..	134.4	71.3	63.1	31.979	238	.....do........	17.2	14.1	12.3	*82.0*	71.5	87.2	14.53
276 ..	134.5	69.1	65.4	29.030	216	.....do........	17.6	14.0	13.15	*79.5*	74.7	93.9	14.92
277 ..	135.1	68.6	66.5	30.391	225	.....do........	18.5	14.1	13.05	*76.2*	70.5	92.6	15.22
278 ..	135.2	72.7	62.5	39.010	289	.....do........	17.5	14.0	12.8	*80.0*	73.1	91.4	14.43
279 ..	135.4	71.7	63.7	29.711	219	.....do........	17.6	12.8	12.15	*72.7*	69.0	94.9	14.18
280 ..	135.5	......	......	....	....	.....do........	18.3	13.4	....	......	......	....	......
281 ..	135.6	72.8	62.8	35.608	263	.....do........	17.3	14.4	12.45	*83.2*	72.0	86.5	14.72
282 ..	135.6	72.7	62.9	32.206	238	.....do........	17.3	14.0	13.1	*80.9*	75.7	93.6	14.80
283 ..	135.7	72.3	63.4	35.154	259	.....do........	17.7	13.5	12.55	*76.3*	70.9	93.0	14.58
284 ..	135.8	......	......	....	....	.....do........	17.6	13.9	....	......	......	....	......
285 ..	136.0	72.2	63.8	34.020	250	.....do........	17.4	14.2	12.65	*81.6*	72.7	89.1	14.75
286 ..	136.1	74.0	62.1	31.979	235	.....do........	17.7	14.5	13.15	*81.9*	74.3	90.7	15.12
287 ..	136.2	70.3	65.9	36.288	266	.....do........	17.6	14.8	13.0	*84.1*	73.9	87.8	15.13
288 ..	136.5	......	......	....	....	.....do........	17.2	13.6	....	......	......	....	......
289 ..	136.7	73.0	63.7	34.474	252	.....do........	17.5	13.9	12.05	*79.4*	68.9	86.7	14.48
290 ..	137.3	72.3	65.0	37.649	274	.....do........	18.0	14.0	12.95	*77.8*	71.9	92.5	14.98
291 ..	137.3	72.1	65.2	30.845	225	.....do........	18.3	12.4	12.85	*67.8*	70.2	103.6	14.52
292 ..	137.3	73.0	64.3	33.113	241	.....do........	18.0	13.0	12.25	*72.2*	68.1	94.2	14.42
293 ..	137.4	71.7	65.7	32.206	234	.....do........	17.4	12.8	12.0	*73.6*	69.0	93.7	14.07
294 ..	137.5	73.6	63.9	32.206	234	.....do........	17.6	13.4	12.05	*76.1*	68.5	89.9	14.35
295 ..	137.8	71.5	66.3	30.391	221	.....do........	17.7	13.9	13.05	*78.5*	73.7	93.9	14.88
296 ..	138.4	73.2	65.2	31.752	229	.....do........	17.3	14.0	12.25	*80.9*	70.8	87.5	14.52
297 ..	138.4	73.0	65.4	36.742	265	.....do........	17.3	14.1	12.45	*81.5*	72.0	88.3	14.62
298 ..	138.5	73.0	65.5	31.775	229	.....do........	17.6	13.6	12.7	*77.3*	72.2	93.4	14.63
299 ..	139.6	71.7	67.9	34.950	250	.....do........	18.2	12.8	12.5	*70.3*	68.7	97.7	14.50
300 ..	139.6	74.7	64.9	39.010	279	.....do........	17.8	14.0	12.95	*78.6*	72.7	92.4	14.92
301 ..	140.0	74.3	65.7	37.195	266	.....do........	17.6	13.6	12.4	*77.3*	70.4	91.2	14.53

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting.)	Height sub ischia (*a*-*b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
302 ..	140.2	74.4	65.8	37.649	268	None.........	17.0	13.8	12.55	*81.2*	73.8	90.9	14.45
303 ..	141.4	71.3	70.1	34.043	241	.....do........	17.6	14.2	13.0	*80.7*	73.9	91.5	14.93
304 ..	142.1	72.8	69.3	33.113	333	.....do........	17.6	14.0	12.65	*79.5*	71.9	90.5	14.75
305 ..	142.3	74.7	67.6	43.546	206	.....do........	18.4	13.9	12.9	*75.5*	70.1	92.8	15.07
306 ..	142.4	76.2	66.2	36.288	255	.....do........	18.9	14.0	13.6	*74.1*	71.9	97.1	15.50
307 ..	142.9	73.5	69.4	39.010	273	.....do........	17.6	13.8	12.95	*78.4*	73.6	93.8	14.78
308 ..	143.6	......	......	....	.....	.....do........	17.4	14.0	....	......	......	....	......
309 ..	143.8	76.5	67.3	43.092	299	.....do........	18.0	13.8	12.95	*76.7*	71.9	93.8	14.92
310 ..	144.0	74.4	69.6	45.360	315	.....do........	18.4	13.8	13.15	*75.0*	71.5	95.3	15.12
311 ..	144.1	80.6	63.5	43.115	299	.....do........	17.8	13.8	12.75	*77.5*	71.6	92.4	14.78
312 ..	144.2	76.7	67.5	41.300	286	.....do........	16.9	13.6	12.6	*80.5*	74.6	92.6	14.37
313 ..	144.3	76.0	68.3	41.504	288	.....do........	17.6	13.8	12.5	*78.4*	71.0	90.6	14.63
314 ..	144.3	76.0	68.3	40.824	283	.....do........	18.3	14.0	13.25	*76.5*	72.4	94.6	15.18
315 ..	144.9	74.9	70.0	39.010	269	.....do........	17.5	14.1	12.8	*80.6*	73.1	90.8	14.80
316 ..	144.9	76.4	68.5	39.939	276	.....do........	17.1	14.2	12.75	*83.0*	74.6	89.8	14.68
317 ..	145.3	78.3	67.0	45.360	312	.....do........	17.8	13.5	13.3	*75.8*	74.7	98.5	14.87
318 ..	145.3	74.7	70.6	40.824	281	.....do........	17.5	13.5	12.55	*77.1*	71.7	93.0	14.52
319 ..	145.6	77.3	68.3	43.999	302	.....do........	18.6	14.4	13.6	*77.4*	73.1	94.4	15.53
320 ..	145.7	76.9	68.8	43.092	296	.....do........	18.0	13.5	13.0	*75.0*	72.2	96.3	14.83
321 ..	145.9	......	......	....	.....	.....do........	18.5	13.6	....	......	......	....	......
322 ..	146.0	74.9	71.1	47.174	323	.....do........	17.4	13.7	12.35	*78.7*	71.0	90.1	14.48
323 ..	146.1	......	......	....	.....	.....do........	17.7	13.5	....	......	......	....	......
324 ..	146.2	79.1	67.1	43.115	295	.....do........	18.4	13.9	13.15	*75.5*	71.5	94.6	15.15
325 ..	146.7	76.9	69.8	39.939	272	.....do........	17.6	13.6	12.6	*77.3*	71.6	92.6	14.60
326 ..	146.9	77.6	69.3	43.546	298	.....do........	17.0	14.6	13.05	*85.9*	76.8	89.4	14.88
327 ..	147.2	78.9	68.3	43.546	296	.....do........	17.2	13.2	12.9	*76.7*	75.0	97.7	14.43
328 ..	147.5	76.6	70.9	45.814	311	.....do........	18.2	14.0	12.5	*76.9*	68.7	89.3	14.90
329 ..	147.8	80.2	67.6	47.651	322	.....do........	17.8	14.4	13.1	*80.9*	73.6	91.0	15.10
330 ..	148.3	75.0	73.3	40.370	272	Some	(17.4)	(14.9)	(12.9)	......	......	....	15.07
331 ..	148.4	75.2	73.2	43.115	290	None..........	18.6	13.9	12.8	*74.7*	68.8	92.1	15.10
332 ..	148.7	78.5	70.2	48.104	324	.....do........	17.6	13.6	12.9	*77.3*	73.3	94.8	14.70
333 ..	148.8	78.8	70.0	48.104	323	.....do........	17.5	14.1	13.55	*80.6*	77.4	96.1	15.05
334 ..	148.9	79.4	69.5	48.989	329	.....do........	17.2	14.2	12.9	*82.6*	75.0	90.8	14.77
335 ..	149.2	84.8	64.4	56.700	380	.....do........	19.3	13.9	13.95	*72.0*	72.3	100.4	15.72
336 ..	149.6	78.5	71.1	44.929	300	.....do........	18.6	14.0	12.6	*75.3*	67.7	90.0	15.07
337 ..	149.6	78.7	70.9	38.102	255	.....do........	17.7	14.4	13.15	*81.4*	74.3	91.3	15.08
338 ..	149.6	81.8	67.8	56.723	379	.....do........	18.7	14.9	13.55	*79.7*	72.5	90.9	15.72
339 ..	149.8	......	......	....	.....	.....do........	17.5	13.5	....	......	......	....	......
340 ..	150.2	82.8	67.4	47.174	314	.....do........	18.3	13.8	12.95	*75.4*	70.8	93.8	15.02
341 ..	150.2	81.8	68.4	55.362	368	.....do........	17.4	14.0	13.1	*80.5*	75.3	93.6	14.83
342 ..	150.7	81.0	69.7	50.350	334	.....do........	18.1	14.0	13.05	*77.3*	72.1	93.2	15.05
343 ..	150.8	......	......	....	.....	.....do........	18.0	13.9	....	......	......	....	......
344 ..	151.0	81.6	69.4	47.174	312	.....do........	17.7	14.1	13.3	*79.7*	75.1	94.3	15.03
345 ..	151.0	78.1	72.9	48.558	322	.....do........	18.2	14.4	12.7	*79.1*	69.8	88.2	15.10
346 ..	151.2	......	......	....	.....	.....do........	17.1	14.3	....	......	......	....	......

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 2. *Detail measurements: height, weight, head*—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	(*a*) Height.	(*b*) Height (sitting).	Height sub ischia (*a–b*).	Weight.	Weight per cm. of stature.	Head.							
						Deformation (occipital compression).	Diameter antero-posterior max.	Diameter lateral max.	Height auditory meati line to bregma.	Cephalic index.	Height-length index.	Height-breadth index.	Cephalic module.
	cm.	*cm.*	*cm.*	*kg.*	*grm.*		*cm.*	*cm.*	*cm.*				
347	151.7	81.0	70.7	54.455	359	None	16.8	14.1	13.35	*83.9*	79.5	94.7	14.75
348	151.8	85.5	66.3	51.257	337	do	17.8	13.3	12.9	*74.7*	72.5	97.0	14.67
349	152.2	81.8	70.4	48.535	319	do	17.2	14.0	12.6	*81.4*	73.3	90.0	14.60
350	152.4	79.8	72.6	44.453	292	do	18.0	14.4	13.3	*80.0*	73.9	92.4	15.23
351	152.4	81.0	71.4	57.607	378	do	17.9	14.6	12.85	*81.6*	71.8	88.0	15.12
352	152.7	81.9	70.8	53.525	350	do	17.1	14.0	12.7	*81.9*	74.3	90.7	14.60
353	152.9	81.5	71.4	57.607	377	do	18.0	14.2	13.25	*78.9*	73.6	93.3	15.15
354	153.3	......	......	....	.....	do	17.8	14.7	....	......	......	....	......
355	153.3	84.9	68.4	71.691	467	do	17.8	14.6	13.35	*82.0*	75.0	91.4	15.25
356	153.4	82.1	71.3	58.061	378	do	18.1	14.5	13.25	*80.1*	73.2	91.4	15.28
357	153.7	82.1	71.6	51.257	333	do	17.0	14.0	12.4	*82.3*	72.9	88.6	14.47
358	153.7	80.2	73.5	55.793	363	do	18.8	14.2	13.1	*75.5*	69.7	92.2	15.37
359	153.8	82.3	71.5	....	.....	do	18.4	13.8	13.1	*75.0*	71.2	94.9	15.10
360	153.8	81.5	72.3	41.300	269	do	18.2	13.7	13.5	*75.3*	74.2	98.5	15.13
361	153.8	82.4	71.4	46.267	301	do	18.4	14.4	13.4	*78.3*	72.8	93.1	15.40
362	154.0	79.4	74.6	50.372	327	do	18.1	14.0	....	......	......	....	......
363	154.0	......	......	....	.....	do	17.4	14.4	....	......	......	....	......
364	154.0	78.8	75.2	44.022	286	do	18.4	14.0	12.45	*76.1*	67.7	88.9	14.95
365	154.3	......	......	....	.....	Moderate	(16.9)	(14.8)	....	......	......	....	......
366	154.4	84.6	69.8	62.143	402	None	17.8	14.6	13.3	*82.0*	74.7	91.1	15.23
367	154.4	81.7	72.7	47.651	309	do	18.1	14.8	13.6	*81.8*	75.1	91.9	15.50
368	154.9	82.3	72.6	60.329	389	do	18.4	14.6	14.0	*79.3*	76.1	95.9	15.67
369	154.9	81.9	73.0	46.743	302	do	18.0	14.0	13.3	*77.8*	73.9	95.0	15.10
370	155.0	79.9	75.1	46.743	301	do	17.4	13.8	12.45	*79.3*	71.5	90.2	14.55
371	155.0	81.7	73.3	67.609	436	do	18.6	14.0	13.4	*75.3*	72.0	95.7	15.33
372	155.2	83.8	71.4	54.432	351	do	18.8	14.0	13.5	*74.5*	71.8	96.4	15.43
373	155.3	81.9	73.4	49.919	321	do	18.8	14.3	13.5	*76.1*	71.8	94.4	15.53
374	155.5	......	......	....	.....	do	17.6	14.2	....	......	......	....	......
375	155.7	......	......	....	.....	do	18.6	14.4	....	......	......	....	......
376	155.8	......	......	....	.....	do	18.6	14.3	....	......	......	....	......
377	155.9	83.8	72.1	54.432	349	do	18.2	13.7	12.7	*75.3*	69.8	92.7	14.87
378	156.3	83.8	72.5	51.710	331	do	18.2	14.0	12.75	*76.9*	70.1	91.1	14.98
379	156.3	83.3	73.0	61.690	395	do	18.2	14.7	13.65	*80.8*	75.0	92.9	15.52
380	157.1	82.5	74.6	56.246	358	do	17.0	15.0	13.0	*88.2*	76.5	86.67	15.00
381	157.2	84.3	72.9	61.259	390	do	16.8	15.0	12.9	*89.3*	76.8	86.0	14.90
382	157.9	84.5	73.4	58.991	374	do	17.9	14.2	13.3	*79.3*	74.3	93.7	15.13
383	158.1	......	......	....	.....	do	18.7	14.0	....	......	......	....	......
384	160.2	82.3	77.9	61.259	382	do	19.5	14.4	13.9	*73.8*	71.3	96.5	15.93
385	160.6	84.4	76.2	56.246	350	do	18.1	14.0	13.1	*77.3*	72.4	93.6	15.07
386	160.8	......	......	....	.....	do	18.6	14.4	....	......	......	....	......
387	162.1	83.8	78.3	....	.....	do	17.7	14.5	13.1	*81.9*	74.0	90.3	15.10
388	163.8	89.0	74.8	70.308	429	do	18.7	13.8	13.9	*73.8*	74.3	100.7	15.47
389	164.3	86.9	77.4	60.329	367	do	18.0	15.0	13.25	*83.3*	73.6	88.3	15.42
390	164.3	......	......	....	....	do	18.3	14.8	....	......	......	....	......

II. Indian Children of Approximated Ages—Continued

Table 3. *Face measurements; pulse, respiration, temperature; force*

(*a*) APACHE BOYS

Record no.	Face.			Physiological data.						
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Force.		
								Pressure.		Traction.
								Right hand.	Left hand.	
	cm.	*cm.*					°*F.*	*kg.*	*kg.*	*kg.*
455	....	....	....	9 a. m	110	42	....	....	....	....
456	....	....	....	10.20 a. m	84	22	....	....	....	....
457	....	....	....	2 p. m	92	28	....	....	....	....
458	....	....	....	1.10 p. m	104	27	....	....	....	....
459	8.7	11.8	*73.73*	1.10 p. m	78	22	99.7	4.0	3.5	0.5
460	9.0	12.1	*74.38*	2.20 p. m	78	20	99.8	3.0	3.0	....
461	9.4	12.0	*78.33*	9.35 a. m	94	22	99.3	5.0	4.0	1.0
462	9.0	12.4	*72.58*	10 a. m	[a] (136)	(32)	(101.5)	5.0	2.5	0.5
463	9.1	12.6	*72.22*	2.30 p. m	[a] (102)	21	99.6	6.0	6.0	....
464	9.3	13.3	*69.92*	1 p. m	[a] (128)	(26)	(100.8)	6.5	4.5	1.0
465	9.5	12.4	*76.61*	1.50 p. m	78	22	99.5	4.5	4.5	....
466	9.0	12.4	*72.58*	9.50 a. m	92	18	99.4	5.0	3.0	2.0
467	9.6	12.9	*74.42*	1.15 p. m	80	21	99.9	9.5	8.0	1.5
468	9.1	12.6	*72.22*	1.20 p. m	[a] (140)	(24)	(101.2)	7.5	7.5	0.5
469	9.5	13.0	*73.08*	1.25 p. m	90	19	99.9	8.0	6.5	0.5
470	10.0	13.3	*75.19*	9.45 a. m	66	24	99.7	8.5	6.0	1.0
471	9.8	12.7	*77.17*	1.40 p. m	[a] (132)	(26)	(101.3)	8.5	7.5	....
472	9.6	12.8	*75.00*	3.30 p. m	72	22	98.7	10.0	9.5	3.0
473	9.4	12.4	*75.81*	10.40 a. m	80	20	98.9	10.0	8.5	2.5
474	9.7	13.1	*74.05*	10 a. m	72	18	98.8	14.0	10.5	2.0
475	9.7	13.2	*73.48*	3.40 p. m	[a] (90)	20	(100.0)	8.5	6.5	2.5
476	10.7	13.2	*81.06*	10.30 a. m	64	18	(96.2)	10.0	7.5	2.0
477	9.6	13.2	*72.73*	10.10 a. m	75	17	98.2	13.0	12.5	5.0
478	9.7	12.6	*76.98*	4.35 p. m	72	22	98.9	15.0	12.5	2.0
479	9.9	13.6	*72.79*	9.50 a. m	74	22	(96.2)	12.0	10.0	5.5
480	9.8	13.2	*74.24*	1 p. m	73	20	98.4	12.0	10.5	3.5
481	10.1	12.9	*78.29*	11.30 a. m	72	18	98.9	12.0	11.0	5.0
482	9.3	12.7	*73.23*	11.20 a. m	66	20	99.0	15.5	16.0	7.0
483	9.7	12.8	*75.78*	9.05 a. m	66	20	99.3	16.0	15.0	3.5
484	9.8	13.0	*75.38*	11.35 a. m	[a] (96)	(23)	(99.9)	(9.0)	(8.0)	(0.5)
485	9.7	13.0	*74.62*	11.15 a. m	72	24	99.4	13.0	11.0	1.0
486	10.2	13.1	*77.86*	11.05 a. m	84	22	99.7	[a] (8.0)	(7.5)	(1.0)
487	9.6	12.6	*76.19*	9 a. m	[a] (96)	18	99.7	12.5	11.0	2.0
488	9.7	13.7	*70.80*	11.15 a. m	72	16	97.6	12.0	10.0	4.0
489	9.7	13.5	*71.85*	10.30 a. m	72	18	99.6	17.5	15.5	3.0
490	9.7	13.8	*70.29*	10.20 a. m	66	18	99.1	14.0	11.0	4.0
491	10.4	13.5	*77.04*	1.10 p. m	78	21	99.3	14.5	14.0	8.0
492	9.8	13.2	*74.24*	3.45 p. m	[a] 84	24	(100.3)	15.0	14.5	2.0
493	10.4	12.9	*80.62*	9 a. m	72	19	99.3	15.5	[b] 15.5	2.5
494	9.8	13.6	*72.06*	11.30 a. m	66	21	99.2	10.5	8.5	6.5
495	9.7	13.3	*72.93*	1.30 p. m	84	18	98.0	13.5	13.5	6.0
496	9.5	13.6	*69.85*	11.40 a. m	82	16	98.7	15.0	12.0	7.0
497	10.0	13.3	*75.19*	9.30 a. m	66	17	98.9	14.0	13.5	1.0
498	10.3	12.8	*80.47*	2.55 p. m	[a] (96)	20	(100.6)	14.0	13.5	6.0

[a] Not in fully normal condition; for additional details see tables on p. 299 et seq.
[b] Right-handed.

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	Face.			Physiological data.						
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Force.		
								Pressure.		Traction.
								Right hand.	Left hand.	
	cm.	*cm.*					°*F.*	*kg.*	*kg.*	*kg.*
499	10.1	13.5	*74.81*	3.15 p. m.	72	24	99.8	15.0	13.0	6.0
500	10.1	13.2	*76.52*	9.40 a. m.	72	20	98.1	12.0	11.0	5.0
501	9.7	13.2	*73.48*	4.25 p. m.	[a] (104)	(22)	(99.5)	16.0	15.0	7.0
502	10.0	12.4	*80.65*	9.20 a. m.	66	16	97.3	13.0	12.0	7.0
503	10.7	13.5	*79.26*	11 a. m.	78	22	98.1	13.5	12.5	11.5
504	9.6	13.1	*73.28*	11.15 a. m.	68	16	99.0	14.5	8.5	2.0
505	10.0	13.6	*73.53*	9.20 a. m.	70	19	99.3	16.5	15.5	5.0
506	10.2	13.3	*76.69*	10.15 a. m.	80	17	99.5	15.0	14.5	7.0
507	9.7	13.2	*73.48*	2 p. m.	[a] (90)	(15)	99.7	14.5	14.5	5.5
508	9.9	12.9	*76.74*	4.45 p. m.	78	17	99.5	14.0	12.5	5.0
509	10.0	13.0	*76.92*	8.50 a. m.	78	16	99.3	16.5	16.5	7.0
510	9.7	13.5	*71.85*	11.30 a. m.	[a] (96)	20	(99.8)	15.5	14.5	2.5
511	9.7	13.4	*72.39*	11 a. m.	72	18	99.3	17.0	14.5	6.0
512	10.0	13.6	*73.53*	10.30 a. m.	72	17	98.8	14.0	14.0	5.0
513	9.6	12.6	*76.19*	4.15 p. m.	72	16	98.5	13.5	9.5	4.0
514	10.1	13.1	*77.10*	9 a. m.	78	21	99.3	10.5	10.5	2.5
515	10.4	12.8	*81.25*	9 a. m.	78	19	97.3	17.0	15.0	5.5
516	9.6	13.6	*70.59*	10.45 a. m.	75	20	98.5	16.0	15.0	5.5
517	10.5	13.5	*77.78*	2.10 p. m.	72	16	98.8	14.5	[b] 14.5	12.0
518	10.0	13.4	*74.63*	8.40 a. m.	70	24	99.3	16.0	15.0	6.0
519	10.7	13.9	*76.98*	2.40 p. m.	78	24	98.8	13.0	[b] 13.0	2.0
520	9.9	13.0	*76.15*	11.40 a. m.	78	(14)	98.2	14.0	13.5	4.0
521	10.2	12.8	*79.69*	2.45 p. m.	72	16	99.1	14.0	[b] 14.0	3.5
522	10.4	13.4	*77.61*	2.50 p. m.	66	16	99.6	17.0	16.5	7.5
523	9.3	13.3	*69.92*	2.15 p. m.	67	17	99.5	17.0	14.5	7.5
524	10.5	13.8	*76.09*	2 p. m.	58	16	99.2	13.0	[c] 17.0	9.0
525	10.5	13.8	*76.09*	3.30 p. m.	66	22	99.3	19.0	17.0	10.5
526	10.4	13.5	*77.04*	9.10 a. m.	72	18	99.8	17.0	17.0	7.0
527	9.9	13.2	*75.00*	2.10 p. m.	[a] (90)	20	99.8	17.5	15.0	5.0
528	10.4	13.8	*75.36*	12.45 p. m.	[a] (90)	(24)	(99.9)	16.0	15.0	2.0
529	10.6	13.5	*78.52*	11 a. m.	66	23	99.3	16.0	[c] 18.0	7.5
530	10.3	14.1	*73.05*	2.45 p. m.	72	21	98.9	13.5	10.0	3.0
531	11.1	14.0	*79.29*	1.30 p. m.	[a] (84)	(22)	(100.2)	17.5	16.0	10.0
532	10.1	13.8	*73.19*	1.20 p. m.	62	20	99.4	19.0	14.5	5.5
533	10.6	13.7	*77.37*	3 p. m.	84	20	98.7	24.5	20.0	9.5
534	9.8	13.9	*70.50*	1.40 p. m.	61	18	99.4	17.0	13.0	10.5
535	10.5	13.4	*78.36*	1.40 p. m.	78	18	99.4	20.5	16.0	7.0
536	9.5	13.8	*68.84*	4.35 p. m.	72	18	99.2	19.0	18.0	5.5
537	10.3	13.6	*75.74*	12.45 p. m.	[a] (78)	(24)	(100.4)	16.0	13.5	8.0
538	10.4	13.9	*74.82*	12.55 p. m.	[a] (82)	(16)	(100.2)	15.0	14.5	6.5
539	9.7	13.7	*70.80*	3.40 p. m.	66	16	98.9	15.0	14.5	6.0
540	10.9	13.4	*81.34*	2.30 p. m.	80	20	99.2	19.0	14.5	6.5
541	10.4	13.4	*77.61*	8.45 a. m.	[a] (96)	(26)	(100.4)	19.0	[b] 20.0	7.0

[a] Not in fully normal condition; for additional details see tables on p. 299 et seq.
[b] Right-handed.
[c] Left-handed.

II. Indian Children of Approximated Ages—Continued

Table 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	Face.			Physiological data.						
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Force.		
								Pressure.		Traction.
								Right hand.	Left hand.	
	cm.	*cm.*					°*F.*	*kg.*	*kg.*	*kg.*
542	10.2	13.9	*73.38*	10 a. m.	72	18	99.4	18.5	15.5	6.0
543	11.3	14.0	*80.71*	2.10 p. m.	54	19	98.9	19.0	18.5	12.0
544	10.6	13.4	*79.10*	1.35 p. m.	(84)	16	98.9	17.0	14.0	7.0
545	11.2	14.1	*79.43*	10 a. m.	66	16	99.0	20.0	16.5	6.0
546	10.8	13.4	*80.60*	1.55 p. m.	72	22	99.3	17.0	[a] 17.0	12.0
547	9.9	13.7	*72.26*	2.30 p. m.	78	19	99.5	17.5	17.0	10.0
548	10.6	13.1	*80.92*	9.10 a. m.	66	16	98.3	17.5	[a] 18.0	10.0
549	10.3	13.1	*78.63*	3 p. m.	72	16	99.1	16.0	14.5	10.0
550	10.7	14.3	*74.83*	11.45 a. m.	49	22	98.8	16.0	15.5	8.0
551	10.6	14.1	*75.18*	10.10 a. m.	66	16	99.3	19.0	17.0	....
552	9.8	13.8	*71.01*	1.35 p. m.	78	20	98.3	17.0	14.0	10.5
553	10.5	13.3	*78.95*	3.10 p. m.	78	16	98.8	20.0	[a] 20.5	10.0
554	10.7	13.7	*78.10*	11 a. m.	[b] 60	(15)	(97.6)	18.0	15.0	13.0
555	10.6	13.6	*77.94*	11.45 a. m.	66	17	98.8	17.5	17.0	2.0
556	10.4	13.6	*76.47*	10.40 a. m.	66	18	98.7	19.0	18.0	10.5
557	10.0	13.7	*72.99*	2.10 p. m.	68	18	98.4	25.0	20.5	16.0
558	10.7	14.0	*76.43*	3 p. m.	63	19	98.5	22.5	18.0	15.5
559	10.6	14.4	*73.61*	10.45 a. m.	78	18	97.6	18.0	13.0	8.0
560	10.9	13.9	*78.42*	10.15 a. m.	[b] 75	16	97.5	18.0	16.5	12.0
561	10.4	14.0	*74.29*	11.45 a. m.	72	17	97.7	25.0	19.0	11.0
562	10.9	14.0	*77.86*	11.10 a. m.	54	15	98.1	24.0	21.5	10.0
563	11.6	13.5	*85.93*	11.30 a. m.	70	20	98.6	21.5	16.0	18.5
564	10.8	13.5	*80.00*	9.45 a. m.	64	16	97.0	23.0	16.5	8.0
565	10.5	13.6	*77.21*	10.15 a. m.	66	18	99.2	22.5	19.0	12.0
566	11.2	14.7	*76.19*	10 a. m.	70	17	99.3	17.5	15.5	13.5
567	10.8	14.3	*75.52*	11.40 a. m.	57	15	98.9	21.0	19.5	13.0
568	10.1	14.0	*72.14*	2.35 p. m.	72	19	98.4	24.0	[a] 25.0	15.5
569	10.7	13.3	*80.45*	8.30 a. m.	(84)	18	99.1	28.5	24.0	9.5
570	11.6	14.3	*81.12*	9 a. m.	70	18	99.2	21.5	20.5	18.0
571	11.1	14.6	*76.03*	10.50 a. m.	63	18	98.9	24.5	22.5	16.5
572	10.7	14.1	*75.89*	9.45 a. m.	66	18	98.9	29.0	23.5	12.5
573	11.2	14.2	*78.87*	12.40 p. m.	[b] (84)	(22)	(99.7)	21.0	19.5	14.5
574	10.2	13.3	*76.69*	9.20 a. m.	[b] 70	16	98.7	23.0	20.0	17.0
575	11.4	13.6	*83.82*	11.20 a. m.	72	14	98.7	29.0	23.5	13.0
576	11.2	14.2	*78.87*	10 a. m.	[b] 78	20	(101.2)	27.0	25.5	14.0
577	11.4	14.6	*78.08*	9.20 a. m.	78	20	98.8	23.0	[a] 26.0	12.0
578	11.0	14.0	*78.57*	9.40 a. m.	66	16	98.7	23.0	21.0	15.0
579	11.1	14.1	*78.72*	11 a. m.	60	20	99.4	27.0	24.5	18.0
580	11.2	13.6	*82.35*	11.30 a. m.	66	16	98.8	23.0	21.0	14.5
581	11.3	14.7	*76.87*	2.30 p. m.	70	16	97.9	25.5	23.0	13.5
582	10.0	13.3	*75.19*	9.30 a. m.	69	21	98.5	22.0	18.5	10.0
583	10.9	13.9	*78.42*	1.10 p. m.	63	18	98.8	33.0	27.0	25.5
584	11.1	14.2	*78.17*	10.40 a. m.	[b] (60)	(16)	(97.1)	24.0	18.5	8.0

[a] Right-handed.
[b] Not in fully normal condition; for additional details see tables on p. 299 et seq.

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	Face.			Physiological data.						
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Force.		
								Pressure.		Traction.
								Right hand.	Left hand.	
	cm.	*cm.*					*°F.*	*kg.*	*kg.*	*kg.*
585	11.2	14.3	*78.32*	1.35 p. m.	78	23	99.7	25.5	24.5	18.0
586	11.3	14.0	*80.71*	9.20 a. m.	78	24	98.9	28.0	25.5	16.0
587	11.2	13.9	*80.58*	1.15 p. m.	[a] 72	24	99.7	32.5	28.0	18.5
588	10.8	13.8	*78.26*	1.35 p. m.	54	18	....	31.0	28.0	20.5
589	11.4	14.4	*79.17*	2.20 p. m.	[a] (86)	20	99.5	33.0	28.0	12.5
590	11.3	14.5	*77.93*	9.20 a. m.	70	19	99.6	32.5	[b] 37.5	22.0
591	12.0	14.2	*84.51*	10.20 a. m.	78	18	99.0	22.0	[c] 22.5	14.0
592	11.8	14.2	*83.10*	9.55 p. m.	[a] (84)	18	98.9	23.5	[c] 24.5	14.0
593	11.9	14.1	*84.40*	8.35 a. m.	70	22	99.2	31.0	25.5	14.5
594	11.2	13.9	*80.58*	9.10 a. m.	78	18	99.0	38.0	33.5	24.0
595	11.1	14.8	*75.00*	1.35 p. m.	66	19	98.5	37.0	35.0	23.0
596	12.2	15.0	*81.33*	5 p. m.	72	18	99.3	34.0	32.0	19.5
597	12.2	14.6	*83.56*	2.50 p. m.	62	18	98.8	32.0	[c] 34.0	22.0
598	11.3	14.5	*77.93*	4 p. m.	60	18	98.5	31.5	27.0	20.5
599	11.0	13.5	*81.48*	2.45 p. m.	76	(14)	98.9	37.0	33.0	20.5
600	11.6	14.2	*81.69*	....	(*a*)	....	....	35.5	35.0	18.0
601	11.6	14.4	*80.56*	3.20 p. m.	66	22	98.9	39.0	[b] 40.0	15.5
602	12.0	14.4	*83.33*	4.25 p. m.	69	19	99.1	30.0	27.0	12.0
603	11.6	14.5	*80.00*	4.15 p. m.	72	16	98.8	40.5	37.5	20.0
604	11.6	14.6	*79.45*	2.45 p. m.	78	14	99.1	31.0	27.0	23.0
605	11.8	14.2	*83.10*	2.25 p. m.	62	20	98.2	34.0	33.5	24.5
606	11.6	13.7	*84.67*	3.45 p. m.	62	18	98.7	31.5	30.0	30.5
607	11.6	14.4	*80.56*	2.10 p. m.	72	16	98.8	37.5	32.5	18.0
608	11.8	14.7	*80.27*	8.30 a. m.	72	16	98.8	42.0	39.0	23.5
609	11.6	14.7	*78.91*	4.30 p. m.	66	16	98.2	38.0	29.5	27.0
610	11.5	14.3	*80.42*	3.30 p. m.	61	20	99.2	40.5	35.5	29.0
611	11.5	14.2	*80.99*	11.45 a. m.	60	16	99.1	....	31.0	20.0
612	11.9	14.4	*82.64*	3 p. m.	69	17	99.0	30.5	[b] 35.0	22.0
613	12.0	14.2	*84.51*	3.25 p. m.	66	16	99.0	34.5	33.0	18.0
614	11.3	14.2	*79.58*	2.40 p. m.	58	18	98.1	33.5	32.0	24.0
615	10.4	15.0	*69.33*	2.45 p. m.	60	17	98.7	35.0	31.5	23.0
616	12.5	14.8	*84.46*	3.45 p. m.	63	24	99.2	40.0	38.5	21.5
617	12.1	15.3	*79.08*	11.45 a. m.	57	16	97.3	25.0	24.0	17.5
618	11.2	14.3	*78.32*	2.45 p. m.	60	15	99.3	42.0	[c] 42.5	22.0
619	10.7	15.3	*60.93*	3.40 p. m.	59	16	98.3	34.0	27.0	19.5
620	12.1	14.2	*85.21*	2 p. m.	58	20	98.7	37.5	33.0	26.0
621	11.4	14.9	*76.51*	2.30 p. m.	74	19	98.9	36.0	35.5	25.5
622	11.9	14.5	*82.07*	3.15 p. m.	60	15	98.0	31.5	[b] 35.0	18.0
623	11.6	14.7	*78.91*	10 a. m.	66	20	98.8	39.0	33.5	26.0
624	12.2	14.5	*84.14*	4.50 p. m.	72	20	(96.7)	31.0	[b] 34.0	28.0
625	11.8	14.8	*79.73*	2.15 p. m.	72	14	99.5	40.0	36.0	26.0
626	11.8	15.5	*76.13*	4 p. m.	68	17	98.9	42.5	38.5	32.0
627	12.2	15.6	*78.21*	....	(*a*)	....	....	34.5	28.5	16.0

[a] Not in fully normal condition; for additional details see tables on p. 299 et seq.
[b] Right-handed.
[c] Left.handed.

II. Indian Children of Approximated Ages—Continued

Table 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	Face.			Physiological data.				Force.		
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Pressure. Right hand.	Pressure. Left hand.	Traction.
	cm.	*cm.*					° *F.*	*kg.*	*kg.*	*kg.*
628	11.8	14.4	*81.94*		(*a*)			45.5	39.0	29.5
629	11.7	14.4	*81.25*		(*a*)			45.0	44.5	26.0
630	11.2	14.3	*78.32*	2.10 p. m.	70	16	98.6	36.5	33.5	17.5
631	11.7	15.3	*76.47*	12.30 p. m.	66	18	99.5	45.0	44.0	35.0
632	11.6	14.5	*80.00*	1.40 p. m.	72	16	98.7	42.5	36.0	29.0
633	11.4	14.9	*76.51*	4.10 p. m.	62	14	98.0	43.5	[b] 39.0	30.0
634	11.8	15.0	*78.67*	3.55 p. m.	74	19	100.1	40.0	38.5	25.5
635	11.6	14.6	*79.45*		(*a*)			36.0	34.5	26.5
636	12.1	14.4	*84.03*	8.45 a. m.	63	18	98.8	46.0	41.0	28.0
637	11.4	14.6	*78.08*		(*a*)			51.5	44.0	23.0
638	11.7	14.4	*81.25*	8.20 a. m.	[a] (90)	(24)	(98.6)	47.0	45.0	34.0
639	12.6	14.6	*86.30*	4.15 p. m.	66	18	98.5	44.0	[b] 43.5	27.0
640	12.1	14.3	*84.62*	3.30 p. m.	58	18	99.6	31.5	28.5	22.0
641	12.2	14.6	*83.56*	10.20 a. m.	60	16	98.9	61.0	50.0	25.0
642	12.9	14.9	*86.58*	1.25 p. m.	66	20	99.3	41.5	[b] 35.5	27.0
643	11.5	13.9	*82.73*	3.30 p. m.	70	16	98.7			
644	11.4	14.4	*79.17*	9 a. m.	64	20	98.5	36.0	34.5	21.0
645	10.6	14.9	*71.14*	4.40 p. m.	60	18	98.4	52.0	41.5	28.0

(*b*) **APACHE GIRLS**

Record no.	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Right hand.	Left hand.	Traction.
646	9.0	12.0	*75.00*	2.35 p. m.	[a] (98)	(26)	(100.4)	2.0	2.0	0.5
647	9.6	12.2	*78.69*	9.30 a. m.	79	20	98.2			
648	8.9	12.7	*70.08*	12.25 p. m.	94	24	100.4	5.0	3.5	.5
649	9.2	11.8	*77.97*	3.30 p. m.	93	20	100.5	1.5	1.5	
650	8.5	12.5	*68.00*	2.45 p. m.	86	23	100.8	3.0	2.0	
651	9.1	12.1	*75.21*	3.40 p. m.	90	22	100.1	4.0	4.0	
652	9.0	12.2	*73.77*	3.05 p. m.	87	18	100.4	7.0	5.0	1.0
653	9.3	12.8	*72.66*	2.55 p. m.	87	20	100.3	4.5	2.5	.5
654	9.6	12.8	*75.00*	3.15 p. m.	90	24	99.8	6.0	4.0	.5
655	9.4	12.6	*74.60*	9.40 a. m.	78	19	99.2	12.0	11.0	1.0
656	9.3	12.6	*73.81*	10.30 a. m.	76	24	99.6	14.0	13.5	2.0
657	9.2	13.3	*69.17*	10.20 a. m.	90	19	99.9	16.5	14.0	1.5
658	9.4	12.8	*73.44*	11.50 a. m.	[a] (96)	22	99.9	[c] 13.5	13.5	1.5
659	9.5	13.3	*71.43*	9.45 a. m.	81	20	99.0	13.0	12.0	4.0
660	8.9	12.3	*72.36*	4.10 p. m.	[a] (112)	(24)	(100.1)	7.5	6.5	1.0
661	10.0	12.7	*78.74*	11.40 p. m.	[a] (122)	(28)	(100.3)	13.5	11.5	1.0
662	9.8	13.0	*75.38*	9.50 a. m.	90	22	99.5	14.5	10.0	1.0
663	9.3	12.4	*75.00*	9.40 a. m.	[a] (104)	(20)	(99.9)	13.5	12.0	1.5
664	9.0	13.1	*68.70*	3.20 p. m.	[a] (96)	(18)	(100.8)	5.0	4.5	.5
665	9.3	13.2	*70.45*	1.10 p. m.	90	22	98.7	8.5	7.5	2.0
666	9.7	13.2	*73.48*	10 a. m.	78	24	99.4	12.5	10.5	2.0

[a] Not in fully normal condition; for additional details see tables on p. 299 et seq. (for boys) and on p. 310 et seq. (for girls).

[b] Left-handed.

[c] Right-handed.

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	Face.			Physiological data.						
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Force.		
								Pressure.		Traction.
								Right hand.	Left hand.	
	cm.	cm.					°F.	kg.	kg.	kg.
667	10.0	13.0	*76.92*	10.35 a. m.	88	19	100.6	14.5	13.5	1.0
668	9.0	12.9	*69.77*	10.15 a. m.	66	18	99.5	13.5	8.5	3.0
669	9.7	12.6	*76.98*	10.10 a. m.	84	18	99.5	17.5	16.0	2.0
670	9.2	12.6	*73.02*	2 p. m.	[a] (102)	(27)	(101.5)	8.0	6.5	1.0
671	9.3	12.9	*72.09*	10.15 a. m.	72	20	98.2	7.5	6.5	2.0
672	9.6	12.8	*75.00*	1.30 p. m.	86	26	100.0	15.0	14.5	1.0
673	10.2	12.8	*79.69*	10.30 a. m.	80	25	98.7	11.5	9.5	2.0
674	10.3	13.4	*76.87*	5 p. m.	[a] (90)	22	99.5	10.0	8.5	1.0
675	9.9	13.0	*76.15*	10.40 a. m.	85	18	99.3	12.0	11.5	3.5
676	10.0	13.5	*74.07*	9.30 a. m.	84	22	99.9	11.0	10.0	2.0
677	9.8	13.0	*75.38*	10.45 a. m.	[a] (108)	(19)	(100.2)	14.5	13.5	2.0
678	9.7	13.0	*74.62*	11 a. m.	75	17	99.8	11.0	7.5	4.5
679	10.0	12.8	*78.13*	8.40 a. m.	78	24	99.9	8.0	6.5	.5
680	9.4	12.8	*73.44*	9.30 a. m.	84	18	98.9	9.5	8.5	4.5
681	9.2	13.4	*68.66*	11.40 a. m.	78	17	98.2	11.5	11.0	4.0
682	10.1	12.9	*78.29*	11.10 a. m.	80	22	98.7	10.0	8.5	3.0
683	10.0	13.0	*76.92*	3.45 p. m.	76	26	99.9	9.5	9.5	2.0
684	9.5	12.5	*76.00*	9.45 a. m.	[a] 75	20	(100.3)	12.5	10.0	1.0
685	9.8	12.3	*79.67*	1 p. m.	78	20	99.4	6.5	5.0	2.0
686	9.8	13.4	*73.13*	10.30 a. m.	84	20	98.7	13.5	10.5	2.5
687	9.8	13.1	*74.81*	9.50 a. m.	76	23	98.8	12.0	9.5	2.0
688	9.9	12.9	*76.74*	4 p. m.	72	18	99.7	9.0	7.5	1.5
689	9.6	12.8	*75.00*	1.20 p. m.	75	17	99.1	14.0	10.0	5.0
690	9.8	13.4	*73.13*	1.40 p. m.	72	24	99.2	14.5	12.5	5.5
691	10.0	13.5	*74.07*	4.20 p. m.	(88)	20	99.8	16.0	12.5	2.0
692	9.4	12.6	*74.60*	10 a. m.	72	21	99.8	15.0	13.0	4.5
693	9.4	13.7	*68.61*	2.15 p. m.	72	17	99.6	13.5	11.5	4.0
694	9.9	13.2	*75.00*	2.10 p. m.	79	16	98.7	13.5	10.5	3.0
695	9.8	13.2	*74.24*	1.45 p. m.	70	22	98.8	12.5	10.0	2.0
696	9.4	13.2	*71.21*	1.15 p. m.	[a] (90)	(23)	98.9	14.0	13.0	2.0
697	9.7	13.2	*73.48*	4.50 p. m.	78	22	99.4	10.5	8.0	1.0
698	9.6	12.9	*74.42*	2 p. m.	[a] (90)	(19)	(100.4)	15.5	12.5	5.5
699	9.6	13.2	*72.73*	1.50 p. m.	[a] (90)	20	98.9	13.5	11.5	5.5
700	10.2	14.4	*70.83*	9 a. m.	62	20	97.9	10.0	9.0	2.0
701	10.2	12.6	*80.95*	11.20 a. m.	72	16	99.3	12.0	10.5	3.5
702	10.0	12.9	*77.52*	10 a. m.	[a] (90)	(19)	(100.3)	14.5	11.5	3.0
703	10.0	13.4	*74.63*	10.55 a. m.	82	21	99.7	14.5	13.5	2.0
704	10.0	12.8	*78.13*	9.05 a. m.	[a] (92)	20	99.3	13.0	10.5	2.5
705	10.2	13.6	*75.00*	....	....	....	....	13.0	12.0	3.5
706	9.6	12.9	*74.42*	8.35 a. m.	90	20	98.8	[b] 14.0	14.0	8.0
707	10.1	13.4	*75.37*	8.50 a. m.	84	20	99.4	15.5	[c] 14.0	4.0
708	10.3	13.3	*77.44*	2.20 p. m.	78	18	99.1	14.0	12.5	3.5
709	10.7	13.6	*86.03*	8.30 a. m.	[a] (96)	20	98.6	14.5	11.5	6.5
710	9.9	13.1	*75.57*	8.45 a. m.	74	20	98.2	14.0	12.0	4.5

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[a] Not in fully normal condition; for additional details see tables on p. 310 et seq.
[b] Right-handed.
[c] Left-handed.

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	Face.			Physiological data.						
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Force.		
								Pressure.		Traction.
								Right hand.	Left hand.	
	cm.	*cm.*					*°F.*	*kg.*	*kg.*	*kg.*
711..........	10.8	13.9	*77.70*	10.15 a. m.....	78	24	99.5	12.5	12.0	2.0
712..........	10.4	12.9	*80.62*	10.45 a. m.....	[a] 78	18	(97.0)	13.5	11.5	4.0
713..........	10.0	13.4	*74.63*	11.05 a. m.....	78	22	100.1	15.0	14.5	3.0
714..........	10.1	13.1	*77.10*	11.15 a. m.....	[a] 78	18	(97.8)	14.5	13.0	8.0
715..........	9.8	13.4	*73.13*	....	([a])	....	....	14.0	11.0	2.0
716..........	10.4	12.6	*82.54*	1.50 p.m......	78	20	99.1	14.5	10.0	5.5
717..........	10.6	12.8	*82.81*	11.15 a. m.....	84	22	99.8	15.5	14.0	4.0
718..........	10.2	13.7	*74.45*	8.55 a. m......	(90)	22	98.9	14.5	13.5	3.5
719..........	9.7	13.5	*71.85*	9.35 a. m......	72	22	99.4	[b] 12.5	13.0	3.0
720..........	10.0	13.4	*74.63*	9.05 a. m......	(90)	22	99.2	15.0	11.5	5.5
721..........	9.7	12.8	*75.78*	1.35 p.m......	[a] (96)	(22)	(100.1)	14.5	12.0	7.0
722..........	10.4	13.6	*76.47*	9.35 a. m......	72	17	98.2	12.5	11.5	3.0
723..........	10.2	13.3	*76.69*	9.30 a. m......	67	15	98.5	18.0	17.5	10.5
724..........	10.3	13.1	*78.63*	....	([a])	....	....	....	....	....
725..........	10.4	14.0	*74.29*	9.50 a. m......	70	20	99.1	16.5	14.5	3.0
726..........	10.1	13.4	*75.37*	2.45 p.m......	76	18	98.6	13.0	12.0	2.0
727..........	9.8	13.2	*74.24*	4.30 p.m......	84	17	99.1	18.5	17.5	11.0
728..........	10.4	13.6	*76.47*	9.45 a. m......	70	14	98.2	17.0	16.0	12.0
729..........	10.2	13.7	*74.45*	4 p.m.........	84	18	99.2	19.5	18.5	11.0
730..........	9.3	13.6	*68.38*	9.15 a. m......	80	18	99.0	14.5	11.5	7.0
731..........	10.3	13.4	*76.87*	3.30 p.m......	[a] (90)	(24)	(99.5)	16.0	16.5	12.0
732..........	10.7	13.4	*79.85*	8.35 a. m......	78	21	97.2	15.0	14.0	7.0
733..........	11.2	13.3	*84.21*	3.05 p.m......	68	25	99.8	14.5	13.0	7.0
734..........	10.2	13.8	*73.91*	3.40 p. m......	[a] (90)	(22)	(99.8)	18.0	14.5	4.5
735..........	11.2	13.1	*85.50*	11.25 a. m.....	72	21	99.7	19.0	16.0	8.0
736..........	10.4	13.8	*75.36*	10.15 a. m.....	72	17	98.1	[b] 18.5	18.5	10.0
737..........	10.9	14.0	*77.86*	4 p.m.........	76	17	99.5	[b] 19.5	20.0	13.0
738..........	10.6	13.3	*79.70*	1.50 p.m......	76	18	98.3	15.0	14.0	4.5
739..........	10.3	13.6	*75.74*	9.25 a. m......	68	19	98.1	18.5	17.0	7.5
740..........	10.6	13.4	*79.10*	2.15 p.m......	[a] (82)	(14)	(98.4)	16.5	16.0	13.0
741..........	10.5	13.2	*79.55*	1.40 p.m......	74	18	98.8	15.5	14.0	6.0
742..........	9.8	13.2	*74.24*	1.30 p.m......	80	18	98.8	15.0	14.0	4.5
743..........	10.4	14.0	*74.29*	10.15 a. m.....	82	18	98.3	19.0	17.0	10.0
744..........	10.2	13.2	*77.27*	1.20 p. m......	74	20	98.9	17.5	16.0	9.5
745..........	10.8	13.0	*83.08*	11.45 a. m.....	75	18	97.2	25.0	23.0	10.5
746..........	10.6	14.2	*74.65*	2 p. m.........	76	20	99.4	24.5	21.5	12.0
747..........	10.6	13.4	*79.10*	9.40 a. m......	78	22	98.7	18.0	17.0	5.5
748.........	10.4	13.3	*78.20*	4.30 p. m......	78	22	99.9	23.0	20.5	7.5
749..........	10.8	13.6	*79.41*	1.35 p. m......	75	22	99.9	21.0	20.0	7.0
750..........	9.6	13.1	*73.28*	2.30 p. m......	60	18	98.7	20.0	18.0	10.5
751..........	10.2	13.3	*76.69*	8.30 a. m......	84	21	99.5	16.0	13.5	4.0
752.........	10.4	13.2	*78.79*	11.30 a. m.....	72	18	98.1	22.5	20.0	8.0
753..........	10.7	13.6	*78.68*	10 a. m........	[a] (90)	(21)	(99.9)	22.5	21.5	4.0
754..........	10.2	13.3	*76.69*	10.15 a. m.....	([a])	....	....	16.5	15.0	7.5

[a] Not in fully normal condition; for additional details see table on p. 271 et seq.
[b] Right-handed.

II. Indian Children of Approximated Ages—Continued

Table 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	Face.			Physiological data.						
								Force.		
								Pressure.		
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Right hand.	Left hand.	Traction.
	cm.	*cm.*					°*F.*	*kg.*	*kg.*	*kg.*
755	10.8	13.6	*79.41*	2 p. m.	[a] 78	22	99.9	22.5	17.0	5.5
756	10.6	13.8	*76.81*	4.40 p. m.	78	22	98.7	17.0	12.0	9.5
757	10.0	13.9	*71.94*	4.25 p. m.	[a] 78	22	....	19.0	16.0	5.0
758	11.3	13.9	*81.29*	2.40 p. m.	72	16	98.3	[b] 17.5	19.0	12.0
759	10.0	13.3	*75.19*	2.45 p. m.	84	18	98.1	24.5	18.5	13.5
760	10.6	14.1	*75.18*	11.45 a. m.	68	17	98.7	23.0	21.5	12.0
761	10.8	13.8	*78.26*	1.40 p. m.	84	17	98.5	25.0	22.5	16.0
762	11.4	14.1	*80.85*	4.05 p. m.	72	18	98.3	22.5	18.0	11.0
763	11.0	14.3	*76.92*	9.50 a. m.	72	23	98.7	25.0	23.5	8.0
764	11.1	14.0	*79.29*	2.35 p. m.	72	18	98.7	22.5	20.5	12.5
765	11.6	13.9	*83.45*	1.50 p. m.	[a] (84)	(16)	(100.1)	23.5	18.5	10.0
766	10.7	13.7	*78.10*	4.30 p. m.	60	20	98.4	23.5	21.5	15.0
767	11.1	13.7	*81.02*	8.45 a. m.	[a] 72	(16)	(96.8)	26.0	21.5	10.5
768	11.2	13.9	*80.58*	10 a. m.	70	18	98.0	20.5	15.5	15.5
769	10.4	14.0	*74.29*	3.10 p. m.	68	20	98.1	18.5	17.0	14.0
770	10.4	14.1	*73.76*	2.10 p. m.	[a] (86)	(22)	(100.0)	18.0	17.0	6.0
771	10.7	13.3	*80.45*	2.15 p. m.	[a] (84)	(26)	(99.8)	27.0	23.5	11.0
772	11.6	14.4	*80.56*	10.30 a. m.	78	17	97.9	19.5	17.0	15.0
773	9.9	13.6	*72.79*	2.20 p. m.	72	22	98.5	22.5	19.0	17.5
774	10.8	14.3	*75.52*	10 a. m.	[a] (69)	(16)	(97.2)	16.0	13.0	12.0
775	10.3	13.4	*76.87*	10.30 a. m.	80	17	97.9	18.5	16.0	14.0
776	10.3	13.6	*75.74*	3 p. m.	72	22	98.2	16.5	14.5	10.5
777	10.2	13.1	*77.86*	4.15 p. m.	66	16	97.6	19.5	17.5	12.5
778	11.8	14.4	*81.94*	9.10 a. m.	72	22	99.5	21.0	20.0	18.0
779	10.4	14.1	*73.76*	11.35 a. m.	62	16	97.6	20.5	20.0	14.5
780	10.9	13.4	*81.34*	9.50 a. m.	[a] (61)	(16)	(97.0)	20.5	16.0	16.5
781	10.4	13.9	*74.82*	10.20 a. m.	76	22	98.1	24.0	23.5	15.0
782	11.8	15.0	*78.67*	10.30 a. m.	[a] (81)	(26)	(99.1)	29.5	[c] 27.0	13.0
783	11.2	13.6	*82.35*	4.40 p. m.	68	20	99.3	34.0	30.0	18.0
784	10.5	14.0	*75.00*	2.10 p. m.	65	16	98.2	21.0	20.0	16.5
785	11.1	14.3	*77.62*	3.50 p. m.	[a] (96)	20	99.4	21.0	16.0	9.0
786	11.1	14.4	*77.08*	4.20 p. m.	75	19	97.9	24.0	17.0	12.5
787	10.5	13.7	*76.64*	11.30 a. m.	[a] (56)	(18)	(96.3)	19.0	14.5	13.0
788	10.8	13.9	*77.70*	9.50 a. m.	58	19	99.2	21.5	[c] 23.0	17.0
789	11.2	14.5	*77.24*	....	(*a*)	....	....	....	....	....
790	10.6	14.2	*74.65*	9.55 a. m.	[a] 72	20	(96.1)	21.5	18.5	13.0
791	10.9	14.4	*75.69*	3.30 p. m.	72	18	99.2	22.5	18.0	15.5
792	11.3	13.8	*81.88*	1.30 p. m.	78	18	99.3	[b] 20.0	20.0	12.0
793	10.5	14.0	*75.00*	1.55 p. m.	80	24	98.9	28.0	24.0	17.0
794	10.6	13.7	*77.37*	11.45 a. m.	69	18	98.0	[b] 23.0	23.0	10.5
795	10.4	14.4	*72.22*	4.40 p. m.	72	19	99.3	27.5	27.0	23.0
796	11.4	13.8	*82.61*	10.45 a. m.	72	20	99.2	24.0	23.0	7.0
797	11.2	14.2	*78.87*	1.45 p. m.	82	22	99.1	29.5	24.5	14.0
798	10.9	14.1	*77.30*	4.15 p. m.	66	20	97.3	34.0	29.5	17.5

[a] Not in fully normal condition; for additional details see table on p. 271 et seq.
[b] Right-handed.
[c] Left-handed.

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	Face.			Physiological data.						
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Force.		
								Pressure.		Traction.
								Right hand.	Left hand.	
	cm.	*cm.*					°*F.*	*kg.*	*kg.*	*kg.*
799	11.2	13.0	*86.15*	9.30 a. m.	78	18	99.3	22.0	19.0	4.5
800	10.5	12.8	*82.03*	9.10 a. m.	84	21	98.8	18.5	18.0	14.0
801	10.9	14.5	*75.17*	10.35 a. m.	62	17	98.6	23.5	20.5	12.0
802	11.5	13.4	*85.82*	1.20 p. m.	72	18	99.1	25.0	23.0	9.0
803	11.2	13.9	*80.58*	4 p. m.	78	20	98.9	22.5	20.0	12.0
804	10.2	13.6	*75.00*	10.25 a. m.	(86)	16	98.6	25.5	22.0	8.0
805	11.1	13.5	*82.22*	8.35 a. m.	70	16	97.3	25.0	21.5	17.0
806	10.5	13.8	*76.09*	8.20 a. m.	84	17	99.9	16.0	13.0	4.0
807	10.6	14.0	*75.71*	9.10 a. m.	[a] (102)	20	99.4	[b] 22.0	22.0	6.0
808	10.6	13.7	*77.37*	11.35 a. m.	72	22	99.1	24.0	22.5	16.5
809	10.9	14.6	*74.66*	11 a. m.	70	18	99.1	23.5	20.0	13.0
810	11.3	15.4	*73.38*	3.40 p. m.	75	22	98.9	30.0	26.5	17.5
811	11.0	14.3	*76.92*	4 p. m.	78	18	99.1	22.5	22.0	12.5
812	11.1	14.1	*78.72*	3.40 p. m.	69	18	98.7	32.0	28.5	22.0
813	11.1	14.3	*77.62*	2.45 p. m.	72	16	98.3	29.0	26.5	17.0
814	10.7	13.9	*76.98*	....	(*a*)	....	....	....	....	....
815	10.9	14.4	*75.69*	4.35 p. m.	64	16	98.1	[b] 25.0	25.0	19.5
816	11.6	13.8	*84.06*	10.05 a. m.	66	16	99.2	32.5	28.0	20.5
817	11.3	14.0	*80.71*	5 p. m.	66	20	98.7	26.0	14.5	15.0
818	11.1	14.2	*78.17*	10.20 a. m.	66	20	99.5	28.0	26.5	18.0
819	11.3	13.8	*81.88*	4.45 p. m.	78	22	98.7	20.5	15.5	10.5
820	10.5	14.2	*73.94*	4.20 p. m.	64	17	98.3	28.0	24.0	20.0
821	10.6	13.7	*77.37*	1 p. m.	78	16	98.6	27.0	12.5	18.0
822	10.2	13.6	*75.00*	10.35 a. m.	84	18	98.8	28.0	25.0	6.0
823	11.3	13.5	*83.70*	3.20 p. m.	74	17	98.9	24.5	24.0	23.5
824	11.4	14.8	*77.03*	3.35 p. m.	72	21	99.6	30.5	26.0	20.0
825	11.0	14.3	*76.92*	3.30 p. m.	84	18	98.9	24.5	23.0	17.0
826	11.4	14.3	*79.72*	11.25 a. m.	64	22	98.8	[b] 19.5	19.5	17.0
827	10.7	13.7	*78.10*	4.20 p. m.	68	18	99.3	27.5	20.5	17.0
828	11.0	14.4	*76.39*	3.10 p. m.	78	17	99.2	30.5	28.0	17.0
829	10.7	14.7	*72.79*	3.20 p. m.	[a] (90)	(16)	98.8	32.0	29.0	20.0
830	11.4	14.9	*76.51*	....	(*a*)	....	....	....	....	....
831	10.5	14.5	*72.41*	9.10 a. m.	70	16	98.6	25.5	23.0	12.5
832	11.0	14.2	*77.46*	11.05 a. m.	58	18	98.5	35.0	31.5	18.0
833	11.0	13.8	*79.71*	9.15 a. m.	82	20	99.3	26.5	23.5	16.5
834	11.2	13.8	*81.16*	9.20 a. m.	78	20	98.9	30.0	28.5	21.0
835	11.4	14.2	*80.28*	4.45 p. m.	68	16	99.2	33.5	29.5	17.5
836	11.4	15.0	*76.00*	3 p. m.	62	22	98.9	33.5	30.5	19.0
837	11.3	14.2	*79.58*	11.05 a. m.	72	16	98.8	27.5	22.0	14.5
838	10.5	14.3	*73.43*	4 p. m.	84	19	98.7	22.5	20.5	18.0
839	11.4	14.5	*78.62*	10 a. m.	82	16	98.5	24.0	21.0	14.0
840	11.0	14.3	*76.92*	8.45 a. m.	56	18	98.4	26.5	25.5	16.0
841	10.9	14.3	*76.22*	4.45 p. m.	79	18	98.2	23.5	21.0	17.0
842	11.8	14.7	*80.27*	....	(*a*)	....	....	....	....	....

[a] Not in fully normal condition; for additional details see table on p. 271 et seq.
[b] Right-handed.

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	Face.			Physiological data.						
								Force.		
								Pressure.		
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Right hand.	Left hand.	Traction.
	cm.	*cm.*					°*F.*	*kg.*	*kg.*	*kg.*
843	11.5	14.1	*81.56*	10.45 a. m	68	17	97.8	31.0	30.0	26.0
844	13.0	14.9	*87.25*	11 a. m	66	14	98.3	29.5	24.0	23.5
845	11.9	14.6	*81.51*	11.20 a. m	72	18	98.8	25.5	22.0	20.5
846	11.4	14.4	*79.17*	3.50 p. m	84	18	98.4	29.0	27.5	20.0

(*c*) **PIMA BOYS**

Record no.	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Right hand.	Left hand.	Traction.
81				9.15 a. m	108	28				
82					(*a*)					
83				8.30 a. m	114	28				
84				11. a. m	79	30				
85	8.4	10.8	*77.8*	2.40 p. m	80	26	99.8			
86				7.30 a. m	96	26				
87				10.10 a. m	81	22				
88	9.3	11.7	*79.5*	9 a. m	72	26	99.2	3.0	2.0	0.5
89				3.05 p. m	78	26				
90	9.0	12.0	*75.0*	3.10 p. m	82	29	100.3	3.0	3.0	
91				8 a. m	86	28				
92	9.0	12.1	*74.4*	2.50 p. m	90	24	100.3	2.5	2.5	.5
93				10.30 a. m	80	22				
94	9.9	12.0	*82.5*	3 p. m	80	28	100.3	4.5	3.5	.5
95	9.2	12.0	*76.7*	2 p. m	72	26	99.7	5.0	5.0	1.0
96				2 p. m	[a] (102)	28				
97	9.4	11.8	*79.7*	2.30 p. m	72	26	99.5	5.5	4.0	2.0
98				4 p. m	88	21				
99				8 a. m	84	22				
100	9.3	12.1	*76.9*	2.10 p. m	[a] (96)	(26)	(100.6)	5.0	6.0	1.5
101					(*a*)					
102				3.15 p. m	84	30				
103				4.20 p. m	[a] (96)	25				
104				9.05 a. m	84	28				
105	9.8	12.7	*77.2*	2.05 p. m	90	22	99.8	[b] 15.0	16.0	4.5
106	10.5	12.2	*86.1*	1.45 p. m	82	22	99.7	16.5	13.5	2.0
107	9.6	12.5	*76.8*	9 a. m	72	22	99.8	7.0	5.5	.5
108	10.3	13.4	*76.9*	10.45 a. m	[a] (96)	(30)	(101.5)	16.0	14.5	4.0
109	10.5	12.6	*83.3*	1.10 p. m	■ (96)	(26)	99.8	16.0	12.5	2.0
110	10.0	12.1	*82.6*	11.15 a. m	78	18	99.9	[b] 14.5	16.0	1.0
111	10.0	12.6	*79.4*	10.20 a. m	76	20	99.5	15.0	12.0	2.0
112	9.8	12.7	*77.2*	8.50 a. m	74	20	99.4	11.0	9.0	1.0
113	10.1	12.6	*80.2*	9.20 a. m	80	18	99.4	15.5	15.5	7.0
114	10.0	12.0	*83.3*	11.30 a. m	70	24	99.7	[b] 15.0	15.5	3.0
115	10.5	12.5	*84.0*	2.30 p. m	[a] 72	22	99.9	14.5	11.5	3.0
116	10.0	12.7	*78.7*	2.40 p. m	68	18	99.6	14.5	13.5	4.5
117	10.2	12.8	*79.7*	9.10 a. m	72	24	99.6	12.0	11.5	7.0

[a] Not in fully normal condition; for additional details see table on p. 276 et seq.
[b] Right-handed.

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*c*) **PIMA BOYS**—Continued

Record no.	Face.			Physiological data.						
								Force.		
								Pressure.		
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Right hand.	Left hand.	Traction.
	cm.	*cm.*					°*F.*	*kg.*	*kg.*	*kg.*
118	10.7	13.2	*81.1*	10.55 a. m.	70	24	99.6	16.0	16.0	9.5
119	10.3	13.0	*79.2*	....	84	18	99.3	[a] 15.0	16.0	4.5
120	9.9	13.0	*76.1*	10.10 a. m.	73	25	99.6	15.0	14.5	2.0
121	10.0	12.4	*80.6*	9.40 a. m.	72	21	99.7	15.5	15.0	4.5
122	10.6	13.1	*80.9*	2.15 p. m.	83	16	99.6	17.0	13.5	1.0
123	11.0	12.3	*89.4*	1.30 p. m.	60	19	99.6	15.5	15.0	3.0
124	10.6	13.2	*80.3*	2.55 p. m.	60	20	99.2	15.5	13.5	3.0
125	10.6	12.2	*86.9*	1.30 p. m.	[b] (96)	(30)	(100.1)	13.5	13.0	4.0
126	10.4	12.4	*83.9*	10.40 a. m.	[b] 85	23	98.7	15.0	14.0	6.5
127	10.9	12.1	*90.1*	10 a. m.	74	22	98.7	16.5	15.5	3.5
128	10.4	12.4	*83.9*	10.30 a. m.	72	26	99.1	17.5	15.0	8.0
129	9.7	12.6	*77.0*	1.15 p. m.	[b] (96)	20	(100.0)	19.5	17.0	10.5
130	10.4	12.9	*80.6*	1.30 p. m.	82	25	99.6	17.0	15.0	6.0
131	10.5	13.0	*80.8*	9.50 a. m.	68	19	99.6	18.5	17.5	8.0
132	10.0	13.3	*75.2*	4.40 p. m.	[b] (92)	24	99.8	15.5	13.5	2.5
133	10.0	13.0	*76.9*	11.45 a. m.	72	21	99.6	16.0	14.5	7.5
134	10.6	12.0	*88.3*	11 a. m.	69	15	99.5	16.0	15.0	4.0
135	10.4	13.2	*78.8*	1.40 p. m.	[b] (86)	22	99.5	16.0	15.0	5.5
136	10.5	12.4	*84.7*	1.50 p. m.	62	21	99.7	16.0	15.0	5.0
137	10.3	12.4	*83.1*	8.40 a. m.	78	23	99.5	11.0	[c] 12.0	4.0
138	10.8	13.8	*78.3*	3.05 p. m.	72	22	99.2	16.5	15.5	5.0
139	10.7	12.7	*84.2*	2.45 p. m.	72	20	99.7	13.5	[c] 15.0	3.0
140	10.4	13.4	*77.6*	3.15 p. m.	76	22	99.7	16.5	14.0	4.0
141	10.7	12.6	*84.9*	4 p. m.	72	20	99.4	15.5	14.5	5.0
142	11.1	12.7	*87.4*	11.15 a. m.	72	20	100.0	18.0	14.0	8.0
143	10.2	12.1	*84.3*	1.55 p. m.	(90)	22	99.8	17.5	14.0	6.0
144	10.0	13.0	*76.9*	8.40 a. m.	68	22	99.7	14.5	11.5	11.0
145	10.6	12.8	*82.8*	7.45 a. m.	78	16	99.9	18.5	14.5	9.0
146	10.2	12.8	*79.7*	8.45 a. m.	66	18	99.5	22.0	19.0	9.0
147	10.8	12.4	*87.1*	....	([b])	....	....	....	....	....
148	10.8	13.4	*80.6*	3.35 p. m.	68	19	100.1	18.0	15.5	12.0
149	10.4	12.6	*82.5*	4.30 p. m.	60	21	99.9	16.5	16.0	7.0
150	10.7	12.8	*83.6*	9.25 a. m.	69	18	99.2	20.0	19.5	8.0
151	10.7	13.1	*81.7*	8.20 a. m.	72	21	99.9	16.5	14.0	8.0
152	10.2	13.7	*74.4*	8.55 a. m.	78	20	99.7	19.0	17.0	8.0
153	11.1	13.4	*82.8*	4.15 p. m.	68	21	99.7	18.5	[c] 15.0	11.0
154	10.6	13.2	*80.3*	4 p. m.	65	19	99.2	15.5	13.5	7.0
155	10.1	12.8	*78.9*	7.55 a. m.	[b] (82)	18	(100.0)	20.0	15.0	5.0
156	10.9	12.6	*86.5*	8.30 a. m.	[b] 78	21	99.7	17.0	15.0	8.0
157	10.8	12.9	*83.7*	3.30 p. m.	(84)	19	99.3	18.5	15.5	4.0
158	10.2	13.0	*78.5*	8.10 a. m.	72	16	99.5	14.5	10.5	7.0
159	11.4	12.8	*91.2*	1.20 p. m.	70	22	99.9	16.5	15.5	6.0
160	10.8	12.5	*86.4*	4.50 p. m.	72	21	99.5	[a] 16.5	16.5	8.0
161	10.4	13.2	*78.8*	9.30 a. m.	72	18	98.9	21.0	17.5	9.5

[a] Right-handed.
[b] Not in fully normal condition; for additional details see table on p. 276 et seq.
[c] Left-handed.

II. Indian Children of Approximated Ages—Continued

Table 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*c*) **PIMA BOYS**—Continued

Record no.	Face.			Physiological data.						
								Force.		
								Pressure.		
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Right hand.	Left hand.	Traction.
	cm.	*cm.*					°*F.*	*kg.*	*kg.*	*kg.*
162	10.9	13.1	*83.2*	9.05 a. m.	62	21	99.7	18.0	15.5	10.5
163	10.6	13.4	*79.1*	8.05 a. m.	64	18	99.1	19.0	17.5	6.5
164	10.8	13.2	*81.8*	3.15 p. m.	72	20	99.6	23.0	22.5	12.0
165	10.1	13.0	*77.7*	10.10 a. m.	66	20	99.3	21.5	14.5	7.0
166	11.4	13.4	*85.1*	8.40 a. m.	72	24	99.8	27.0	20.0	12.5
167	11.0	13.4	*82.1*	9.45 a. m.	75	18	99.9	21.5	21.0	6.5
168	10.6	13.7	*77.4*	3.45 p. m.	68	22	99.2	24.5	[a] 23.5	8.0
169	11.3	13.0	*86.9*	1.10 p. m.	66	21	99.5	22.5	21.0	14.0
170	10.2	13.3	*76.7*	5 p. m.	64	23	99.4	21.5	19.0	5.0
171	11.0	13.2	*75.8*	1.40 p. m.	[b] 72	(27)	99.9	[c] 17.0	17.0	10.5
172	10.3	12.9	*79.8*	2.35 p. m.	72	20	98.9	19.0	18.0	6.5
173	10.9	13.4	*81.3*		([b])			24.5	19.0	10.5
174	10.9	13.2	*82.6*	9.40 a. m.	60	18	98.9	25.0	22.0	15.0
175	10.6	12.8	*82.8*	10 a. m.	[b] (84)	(24)	(99.9)	23.5	19.0	14.0
176	11.0	12.7	*86.6*	1.40 p. m.	66	23	(100.2)	20.5	19.0	12.5
177	10.7	13.4	*79.8*	1.30 p. m.	[b] (82)	22	99.3	21.5	17.5	6.0
178	10.9	13.5	*80.7*	1 p. m.	70	25	99.6	24.5	19.5	15.5
179	11.0	13.8	*79.7*	2.45 p. m.	62	20	98.9	23.5	22.0	11.0
180	10.7	13.3	*80.4*	2.30 p. m.	[b] 71	18	99.9	23.5	[a] 25.0	14.0
181	11.9	12.8	*92.9*	2.20 p. m.	72	24	(100.1)	24.0	20.0	10.5
182	11.4	13.3	*85.7*	10.20 a. m.	66	18	99.4	28.5	22.5	14.5
183	10.2	13.2	*77.3*	2.50 p. m.	[b] 64	18	99.9	24.5	20.0	11.5
184	11.6	14.6	*79.4*	7.15 a. m.	60	21	99.0	39.5	36.0	20.5
185	11.4	13.2	*86.4*	9.15 a. m.	[b] (90)	20	99.4	27.0	24.5	15.0
186	12.3	13.5	*91.1*		([b])			28.0	26.0	10.0
187	11.5	14.4	*79.9*	4.20 p. m.	54	20	99.3	34.0	25.5	10.0
188	12.0	14.0	*85.7*	10.50 a. m.	[b] 72	24	99.1	41.0	31.5	22.0
189	12.0	13.8	*87.0*	8.30 a. m.	65	22	99.5	33.5	27.5	21.0
190	11.6	14.0	*82.9*	4.45 p. m.	62	20	98.9	43.0	33.5	23.0
191	11.5	13.1	*87.8*	4 p. m.	[b] (84)	20	(100.1)	33.5	29.5	14.0
192	11.0	13.7	*80.3*	7.30 a. m.	60	18	98.5	39.0	35.5	30.0
193	11.1	14.6	*76.0*	10.30 a. m.	64	16	99.3	47.0	44.0	24.0
194	10.7	13.9	*77.0*	8 a. m.	64	16	99.3	28.5	24.5	16.5
195	12.5	13.8	*90.6*	10.40 a. m.	67	18	99.6	31.5	25.0	21.0
196	12.3	14.2	*86.6*	1.45 p. m.	[b] 72	23	99.5	33.5	29.5	18.0
197	11.3	14.0	*80.7*	3.55 p. m.	62	20	99.2	35.0	[a] 36.0	20.0
198	12.3	14.7	*83.7*	11.25 a. m.	64	15	99.4	44.5	37.5	24.5
199	12.8	13.8	*92.7*	1 p. m.	[b] 72	24	99.7	38.0	37.0	24.0
200	10.9	13.7	*79.6*	3 p. m.	58	18	99.0	28.0	24.0	18.0
201	11.7	13.5	*86.7*		([b])					
202	11.6	14.3	*81.1*	3.25 p. m.	66	20	99.5	42.5	39.5	28.0
203	12.2	13.4	*91.0*		([b])			37.0	33.5	20.5
204	12.3	13.6	*90.4*	10.45 a. m.	78	22	99.8	37.5	[a] 38.0	21.5
205	11.2	13.8	*81.2*	7.20 a. m.	78	20	98.8	38.0	26.0	21.0

[a] Left-handed.
[b] Not in fully normal condition; for additional details see table on p. 276 et seq.
[c] Right-handed.

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*c*) **PIMA BOYS**—Continued

Record no.	Face.			Physiological data.						
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Force.		
								Pressure.		Traction.
								Right hand.	Left hand.	
	cm.	*cm.*					°*F.*	*kg.*	*kg.*	*kg.*
206	12.6	13.7	*92.0*	7.40 a. m.	[a] 76	22	99.6	40.0	33.5	27.0
207	11.6	13.5	*85.9*	7.35 a. m.	74	20	99.0	39.5	35.0	27.0
208	11.9	14.0	*85.0*	4 p. m.	55	22	99.6	35.0	32.5	19.0
209	11.85	14.3	*82.9*	3.15 p. m.	56	16	99.3	38.0	36.0	26.0
210	(11.4)	(14.8)	....	11 a. m.	[a] 66	15	99.1	42.5	38.0	14.0
211	11.4	14.0	*81.4*	7.55 a. m.	66	20	99.4	30.0	28.0	20.0
212	12.5	14.6	*85.6*	11.15 a. m.	72	18	98.9	39.0	31.5	21.0
213	12.8	13.8	*92.7*	....	(*a*)	....	....	42.0	34.0	27.0
214	12.3	14.4	*85.4*	3.10 p. m.	[a] 74	20	99.8	44.5	36.5	29.0
215	12.4	14.0	*88.6*	4.30 p. m.	60	17	99.5	42.0	41.0	25.0
216	12.0	13.5	*88.9*	8.45 a. m.	60	18	99.8	43.5	37.0	25.0
217	11.5	13.7	*83.9*	8.20 a. m.	60	20	99.4	39.0	35.0	16.0
218	12.6	14.3	*88.1*	4.40 p. m.	[a] 70	18	99.7	45.0	41.0	24.0
219	12.2	14.6	*83.6*	5 p. m.	[a] (72)	18	99.3	45.5	38.0	24.5
220	12.2	13.8	*88.4*	3.45 p. m.	[a] (74)	19	99.3	47.0	40.0	25.0

(*d*) **PIMA GIRLS**

Record no.	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Pressure, Right hand.	Pressure, Left hand.	Traction.
221	....	....	....	8.45 a. m.	105	25	....	....	....	....
222	....	....	....	4 p. m.	102	27	....	....	....	....
223	....	....	....	10 a. m.	[a] 108	....	....	....	....	....
224	....	....	....	10.15 a. m.	100	30	....	....	....	....
225	....	....	....	3 p. m.	95	26	....	....	....	....
226	....	....	....	11 a. m.	86	32	....	....	....	....
227	....	....	....	4.30 p. m	99	30	....	....	....	....
228	....	....	....	9 a. m.	(*a*)	26	....	....	....	....
229	....	....	....	11.15 a. m.	96	24	....	....	....	....
230	9.2	11.5	*80.0*	3.25 p. m	96	28	....	....	....	....
231	....	....	....	1.30 p. m	96	24	....	....	....	....
232	....	....	....	10.30 a. m.	[a] (114)	21	....	....	....	....
233	9.0	12.0	*75.0*	3.30 p. m.	84	28	99.5	....	....	....
234	....	....	....	1 p. m.	102	32	....	....	....	....
235	....	....	....	10.10 a. m.	[a] (110)	30	100.6	....	....	....
236	....	....	....	9.20 a. m.	[a] 86	32	100.5	....	....	....
237	9.3	11.5	*80.9*	11.45 a. m.	78	21	99.5	2.5	2.0	0.5
238	9.0	11.6	*77.6*	11.35 a. m.	84	22	99.6	[b] 5.0	6.0	2.5
239	....	....	....	....	(*a*)	....	....	....	....	....
240	....	....	....	....	(*a*)	....	....	....	....	....
241	....	....	....	10 a. m.	78	24	....	....	....	....
242	....	....	....	2.15 p. m	84	22	....	....	....	....
243	9.9	12.2	*81.1*	1.45 p. m	[a] (96)	20	99.8	7.5	7.0	.5
244	9.0	11.8	*76.3*	9.55 a. m.	76	24	100.2	9.5	[c] 12.0	1.0
245	9.7	12.4	*78.2*	9 a. m.	72	18	99.5	7.0	6.5	1.0

[a] Not in fully normal condition; for additional details see table on p. 276 et seq. (for boys) and on p. 279 et seq. (for girls).

[b] Right-handed.

[c] Left-handed.

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	Face.			Physiological data.						
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Force.		
								Pressure.		Traction.
								Right hand.	Left hand.	
	cm.	*cm.*					*°F.*	*kg.*	*kg.*	*kg.*
246	10.0	12.0	*83.3*	11.25 a. m	[a] (90)	(27)	(100.3)	6.5	4.5	1.5
247	10.3	12.4	*83.1*	11.05 a. m	84	24	99.8	5.0	4.0	.5
248	9.6	12.2	*78.7*	2 p. m	80	20	99.8	7.0	6.0	.5
249	9.8	11.7	*83.8*	11.15 a. m	[a] 76	24	100.1	6.5	6.5	.5
250	10.5	12.6	*83.3*	2.30 p. m	[a] 82	23	99.6	9.0	8.5	.5
251	10.2	12.2	*83.6*	10.05 a. m	78	24	100.2	12.5	11.5	1.0
252	....	....	....	11 a. m	78	23	99.8	....	....	....
253	9.5	12.2	*77.9*	10.25 a. m	[a] 86	22	100.3	....	....	....
254	9.7	12.3	*78.9*	9.15 a. m	72	21	99.5	11.5	11.5	.5
255	9.8	12.2	*80.3*	7.40 a. m	85	25	99.6	12.5	10.0	2.0
256	9.9	11.8	*83.9*	10.35 a. m	78	21	99.7	13.5	13.5	4.0
257	10.0	12.1	*82.6*	10.30 a. m	72	18	99.1	14.0	12.5	1.5
258	10.0	12.8	*78.1*	3.40 p. m	72	23	99.6	12.5	7.5	.5
259	10.5	12.2	*86.1*	10.25 a. m	78	21	100.2	13.5	12.5	2.0
260	9.1	12.4	*73.4*	10.15 a. m	78	20	99.5	7.5	7.0	1.5
261	....	....	....	3.30 p. m	84	22	....	....	....	....
262	10.2	12.0	*85.0*	9.25 a. m	70	27	99.7	11.0	11.0	5.0
263	10.1	12.4	*81.4*	2.35 p. m	84	18	99.9	10.0	9.5	.5
264	10.1	12.7	*79.5*	10.40 a. m	76	20	99.6	13.5	13.0	2.0
265	10.0	12.6	*79.4*	2.15 p. m	[a] 80	16	100.0	12.0	10.0	1.0
266	....	....	....	11.50 a. m	[a] (96)	(25)	(100.1)	....	....	....
267	10.3	12.1	*85.1*	10.50 a. m	[a] (86)	20	99.7	14.0	11.0	1.5
268	....	....	....	10.15 a. m	80	23	....	....	....	....
269	10.9	12.1	*90.1*	10.15 a. m	[a] (108)	(28)	(100.5)	(7.0)	(3.0)	(.5)
270	10.0	12.4	*80.6*	10.05 a. m	69	23	99.8	14.5	14.0	2.5
271	10.0	12.2	*82.0*	10.55 a. m	72	22	100.1	14.5	11.0	3.0
272	....	....	....	10.30 a. m	80	18	....	....	....	....
273	10.2	12.4	*82.3*	2.50 p. m	78	24	100.1	6.5	5.5	.5
274	9.6	12.8	*75.0*	2.45 p. m	84	20	99.8	13.0	11.0	1.0
275	9.5	12.2	*77.9*	11 a. m	70	21	98.9	14.0	13.0	.5
276	10.8	12.7	*85.04*	3 p. m	[a] 84	20	99.9	13.0	11.5	3.0
277	10.2	12.4	*82.3*	10.45 a. m	[a] (84)	(24)	(100.4)	12.5	13.5	4.0
278	10.5	12.7	*82.7*	....	([a])	....	....	14.0	11.0	1.0
279	10.7	12.0	*89.2*	4.05 p. m	(90)	16	99.5	12.0	10.0	2.0
280	....	....	....	11.55 a. m	72	20	99.7	....	....	....
281	10.7	12.6	*84.9*	11.10 a. m	[a] 84	20	99.2	14.0	13.0	2.0
282	10.2	12.6	*80.9*	8 a.m	66	30	99.4	14.0	13.0	1.5
283	10.3	12.6	*81.7*	7.45 a. m	72	20	99.7	15.5	14.5	2.5
284	....	....	....	10.45 a. m	70	30	99.6	....	....	....
285	10.0	13.1	*76.3*	3.45 p. m	72	18	99.9	7.0	5.5	.5
286	10.8	12.7	*85.0*	3 p. m	78	20	99.9	16.5	10.5	2.0
287	10.3	12.8	*80.5*	1 p. m	72	25	99.6	12.0	14.0	1.0
288	....	....	....	9.45 a. m	71	21	99.8	....	....	....
289	10.3	13.0	*79.2*	8.45 a. m	78	22	100.3	12.5	12.5	6.0
290	10.6	12.6	*84.1*	3.55 p. m	72	26	99.8	14.5	12.5	1.0

[a] Not in fully normal condition; for additional details see table on p. 279 et seq.

II. Indian Children of Approximated Ages—Continued

Table 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	Face.			Physiological data.						
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua.)	Force.		
								Pressure.		Traction.
								Right hand.	Left hand.	
	cm.	*cm.*					°*F.*	*kg.*	*kg.*	*kg.*
291	10.3	11.8	*87.3*	9.05 a. m.	70	22	99.5	13.0	10.0	4.5
292	10.0	12.3	*81.3*	8.30 a. m.	78	20	99.4	15.5	13.0	3.5
293	10.2	12.3	*82.9*	8 10 a. m.	[a] (82)	(22)	(100.1)	14.5	12.0	2.0
294	9.8	12.1	*81.0*	8.20 a. m.	78	18	99.4	15.0	12.0	3.0
295	10.3	12.0	*85.8*	9.45 a. m.	[a] (90)	20	(100.1)	(9.0)	(5.0)	....
296	10.1	12.1	*83.5*	9.35 a. m.	[a] (92)	20	(100.1)	12.5	10.5	1.0
297	10.6	13.6	*77.9*	11.55 a. m.	72	23	99.4	14.0	10.5	2.0
298	9.9	12.7	*77.9*	4.15 p. m.	[a] (78)	(36)	(100.0)	13.5	12.5	1.0
299	10.7	12.0	*89.2*	3.10 p. m.	72	24	99.8	16.0	14.0	7.5
300	10.2	12.5	*81.6*	11.30 a. m.	72	18	99.6	20.0	16.5	9.5
301	11.0	12.7	*86.6*	11.40 a. m.	74	20	99.6	15.0	14.0	5.0
302	10.6	12.7	*83.5*	1.15 p. m.	72	24	99.9	16.0	13.5	4.5
303	10.1	13.2	*76.5*	10.50 a. m.	78	19	99.0	12.5	10.0	2.0
304	10.3	13.0	*79.2*	11.45 a. m.	68	16	99.6	15.0	13.5	2.0
305	11.6	13.3	*87.2*	11 a. m.	72	16	99.5	17.5	16.5	10.0
306	10.6	12.6	*84.1*	9.55 a. m.	[a] (100)	(26)	(100.5)	(12.5)	(8.0)	(1.5)
307	10.3	13.0	*79.2*	11.45 a. m.	66	23	99.3	14.0	12.5	2.0
308	....	....	....	11.10 a. m.	62	18	99.0	....	....	....
309	10.4	12.6	*82.5*	8.45 a. m.	76	24	99.7	16.5	15.5	5.5
310	10.9	13.1	*83.2*	10.25 a. m.	70	28	99.2	16.5	14.5	5.0
311	10.6	13.2	*80.3*	2 p. m.	84	21	99.5	19.5	14.0	5.0
312	10.4	12.7	*81.9*	9.05 a. m.	[a] (88)	23	99.4	14.0	10.5	2.0
313	10.4	13.0	*80.0*	9.15 a. m.	74	22	99.9	14.5	12.5	3.5
314	10.6	13.1	*80.9*	8.35 a. m.	[a] (90)	24	99.5	17.5	15.0	5.5
315	10.6	12.6	*84.1*	4.40 p. m.	78	22	100.4	17.5	15.0	7.5
316	10.6	12.9	*82.2*	4 p. m.	[a] (90)	(16)	(100.0)	18.0	16.5	3.0
317	11.0	12.6	*87.3*	4.10 p. m.	[a] (102)	(22)	(100.0)	18.5	18.0	5.5
318	10.5	13.1	*80.1*	4.10 p. m.	75	18	99.7	19.0	15.0	7.0
319	11.5	13.3	*86.5*	3.15 p. m.	72	24	100.0	(17.5)	(b)	(b)
320	11.3	12.4	*91.1*	8.55 a. m.	72	24	99.5	18.5	15.5	4.5
321	....	....	....	9.15 a. m.	[a] 74	(31)	98.2	....	....	....
322	10.2	12.9	*79.1*	10.10 a. m.	72	16	99.2	22.5	20.5	12.0
323	....	....	....	12 m.	[a] (84)	18	99.3	....	....	....
324	11.2	12.9	*86.8*	9.10 a. m.	[a] 72	19	99.8	19.5	13.0	3.5
325	10.7	12.9	*82.9*	9.25 a. m.	[a] (86)	22	99.3	15.0	13.5	2.0
326	10.6	13.6	*77.9*	4.30 p. m.	78	22	99.9	14.0	12.0	2.5
327	11.0	12.2	*90.2*	9.35 a. m.	72	18	99.6	16.5	[c] 14.5	8.5
328	10.3	13.2	*78.0*	10.40 a. m.	78	18	99.5	18.0	20.0	5.0
329	10.8	14.0	*77.1*	11.40 a. m.	66	22	99.4	22.0	18.5	8.0
330	10.6	13.5	*78.5*	10.35 a. m.	76	22	99.9	20.0	17.5	5.0
331	10.5	13.3	*78.9*	1.30 p. m.	72	18	99.8	13.0	12.5	2.0
332	11.0	12.9	*85.3*	4.40 p. m.	[a] 72	25	99.7	18.5	17.5	11.0
333	10.4	13.2	*78.8*	11.10 a. m.	60	21	99.5	12.0	10.0	2.0
334	11.3	13.0	*86.9*	3.30 p. m.	68	20	100.1	20.0	18.0	12.0

[a] Not in fully normal condition; for additional details see table on p. 279 et seq.
[b] Sore finger.
[c] Left-handed.

II. Indian Children of Approximated Ages—Continued

Table 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	Face.			Physiological data.						
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sub lingua).	Force.		
								Pressure.		Traction.
								Right hand.	Left hand.	
	cm.	*cm.*					°*F.*	*kg.*	*kg.*	*kg.*
335	12.1	14.1	*85.8*	2.25 p. m.	67	20	99.1	20.5	19.5	14.5
336	10.6	12.8	*82.8*	9.55 a. m.	[a] 78	19	(100.5)	15.0	10.0	6.5
337	10.9	13.0	*83.8*	1.20 p. m.	66	18	99.7	20.5	15.0	4.5
338	11.5	13.7	*83.9*	1.25 p. m.	78	22	99.3	21.5	19.5	12.5
339	....	....	....	11.45 a. m.	72	21	99.4	....	....	....
340	11.0	13.2	*83.3*	7.10 a. m.	72	20	98.9	20.5	18.0	14.5
341	11.3	13.2	*85.6*	9.20 a. m.	72	18	99.6	16.5	14.5	10.5
342	11.4	13.1	*87.0*	9.30 a. m.	72	18	99.9	21.0	18.0	12.5
343	....	....	....	11.40 a. m.	[a] (80)	(22)	(99.9)	....	....	....
344	10.8	13.8	*78.3*	4.50 p. m.	72	21	99.6	23.5	20.5	9.5
345	11.0	13.2	*83.3*	1.40 p. m.	[a] (90)	22	99.6	18.0	13.5	2.0
346	....	....	....	11.30 a. m.	76	17	99.7	....	....	....
347	11.2	13.9	*80.6*	1.45 p. m.	[a] (84)	18	99.2	18.0	17.5	12.0
348	11.3	12.9	*87.6*	1.45 p. m.	72	17	99.6	22.5	20.0	14.0
349	11.4	13.1	*87.0*	1.55 p. m.	78	24	99.2	18.5	15.5	13.0
350	11.0	13.5	*81.5*	2 p. m.	68	19	99.7	[b] 18.5	17.5	5.5
351	10.9	13.8	*79.0*	2.30 p. m.	84	14	99.2	16.5	17.0	6.0
352	10.6	12.9	*82.2*	4.30 p. m.	[a] (90)	(24)	(100.1)	19.5	17.5	10.0
353	11.2	13.6	*82.3*	1.15 p. m.	72	22	99.6	26.0	22.5	18.0
354	....	....	....	10.55 a. m.	70	17	99.2	....	....	....
355	11.3	13.7	*82.5*	3.20 p. m.	63	18	99.2	29.5	26.5	17.5
356	11.4	13.3	*85.7*	9.45 a. m.	80	24	99.7	27.0	24.5	8.0
357	10.8	12.9	*83.7*	9 a. m.	78	20	99.9	22.5	19.0	9.5
358	11.2	13.7	*81.7*	1.35 p. m.	84	22	99.9	29.5	24.5	14.0
359	10.6	13.4	*79.1*	....	([a])	....	....	18.0	14.5	8.0
360	11.4	13.1	*87.0*	....	([a])	....	....	22.5	18.0	7.0
361	11.2	13.8	*81.2*	8 a. m.	78	20	99.3	21.0	18.0	13.5
362	10.9	13.4	*81.3*	5 p. m.	72	20	99.6	22.5	17.5	9.0
363	....	....	....	10.30 a. m.	[a] (93)	(26)	(100.5)	....	....	....
364	11.4	13.5	*84.4*	8.30 a. m.	78	20	99.5	21.5	19.5	12.0
365	....	....	....	11.25 a. m.	60	19	99.5	....	....	....
366	11.6	13.8	*84.1*	7.20 a. m.	72	20	99.3	27.5	20.0	8.0
367	10.9	13.6	*80.1*	9.45 a. m.	74	19	99.1	19.5	18.0	6.0
368	11.8	13.5	*87.4*	11.20 a. m.	63	20	99.4	28.5	24.5	12.5
369	10.9	13.4	*81.3*	8.40 a. m.	[a] 78	20	99.9	25.0	23.0	15.0
370	11.1	13.0	*85.4*	2 p. m.	76	20	99.1	21.5	20.5	8.0
371	11.3	14.2	*79.6*	1.05 p. m.	78	19	99.7	[b] 25.0	25.5	13.0
372	11.6	12.9	*89.9*	8.20 a. m.	74	22	99.6	22.5	21.0	9.5
373	11.3	13.6	*83.1*	2.10 p. m.	[a] 78	20	99.9	23.5	21.0	12.0
374	....	....	....	9.25 a. m.	70	20	99.3	....	....	....
375	....	....	....	9.40 a. m.	72	16	99.6	....	....	....
376	....	....	....	10 a. m.	72	19	99.8	....	....	....
377	10.6	13.8	*76.8*	7.45 a. m.	66	20	99.2	23.0	20.0	12.0
378	11.2	12.7	*88.2*	7.55 a. m.	[a] (86)	18	99.4	26.0	22.5	16.0
379	11.8	14.3	*82.5*	8.10 a. m.	72	17	98.9	27.5	26.5	19.5

[a] Not in fully normal condition; for additional details see table on p. 279 et seq.
[b] Right-handed.

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 3. *Face measurements; pulse, respiration, temperature; force*—Continued

(*d*) PIMA GIRLS—Continued

Record no.	Face.			Physiological data.						
								Force.		
								Pressure.		
	Height (menton-nasion).	Diameter bizygomatic max.	Facial index.	Time of day.	Pulse (sitting).	Respiration (sitting).	Temperature (sublingua).	Right hand.	Left hand.	Traction.
	cm.	*cm.*					°*F.*	*kg.*	*kg.*	*kg.*
380	11.3	13.8	*81.9*	4.50 p. m.	[a] 72	20	100.1	20.0	17.5	12.0
381	11.1	13.8	*80.4*	7.40 a. m.	66	23	99.7	([b])	(20.5)	([b])
382	11.4	13.9	*82.0*	7.30 a. m.	58	24	98.9	28.0	25.5	20.0
383				10.40 a. m.	64	20	99.4			
384	11.6	14.0	*82.9*	11.30 a. m.	[a] 72	22	99.6	26.0	23.5	16.0
385	11.4	13.5	*84.4*	9.40 a. m.	70	19	99.1	33.0	29.5	20.5
386				11.15 a. m.	60	18	99.5			
387	11.6	13.4	*86.6*	4.20 p. m.	[a] (86)	(20)	(100.5)	27.5	21.0	12.0
388	11.6	13.6	*85.3*	2.15 p. m.	[a] (84)	(24)	99.5	28.5	26.0	15.0
389	11.2	14.3	*78.3*	8.50 a. m.	66	22	98.8	31.5	29.0	18.0
390				10.50 a. m.	62	17	99.5			

[a] Not in fully normal condition; for additional details see table on p. 279 et seq.
[b] Right hand sore.

TABLE 4 (Male).[a] *Teeth; condition of subject*[b]

(*a*) APACHE BOYS

Record no.	Position.	Teeth.[c]													Condition of subject.[d]
		First.					Second.								
455	Upper.. Right..	1	...	...	...	...	...	...	...	...	...	...	...	...	(+)
	Upper.. Left....	1	...	...	...	...	...	...	...	...	...	...	...	...	
	Lower.. Right..	1	2	...	...	...	...	...	...	...	...	...	...	...	
	Lower.. Left....	1	...	...	...	...	...	...	...	...	...	...	...	...	
456		All 20.					...	...	...	...	...	...	...	...	(+)
457		All 20.					...	...	...	...	...	...	...	...	(+)
458		All 20.					...	...	...	...	...	...	...	...	(+)
459		All 20.					...	...	...	...	...	...	...	...	(+)
460	Upper.. Right..	All 20.					...	...	...	...	...	8	...	...	(+)
	Upper.. Left....	All 20.					...	...	...	...	...	8	...	...	
	Lower.. Right..	All 20.					...	...	...	...	...	8	...	...	
	Lower.. Left....	All 20.					...	...	...	...	...	8	...	...	
461	Upper.. Right..	1	2	...	4	5	...	...	...	...	...	8	...	...	(+)
	Upper.. Left....	1	2	...	4	5	...	...	...	...	...	8	...	...	
	Lower.. Right..	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower.. Left....	1	2	3	4	5	...	...	...	...	...	8	...	...	

[a] The continuation of Table 4 (Male) will be found on p. 322 et seq.
[b] See also table on p. 283 et seq.
[c] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.
[d] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject* [a]—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
462	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	Not fully well.
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
463	Upper	Right	All 20.					...	...	...	...	...	...	...	...	Tongue coated.
		Left	All 20.					...	...	...	...	...	...	...	...	
	Lower	Right	All 20.					...	...	...	...	...	8	...	...	
		Left	All 20,					...	...	...	...	...	8	...	...	
464	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	Tongue slightly coated.
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	...	...	...	...	8	...	...	
465	Upper	Right	...	2	3	4	5	...	...	...	...	...	8	...	...	(+)
		Left	...	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
466	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	(+)
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
467	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	(+)
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
468	Upper	Right	1	2	3	...	5	...	...	...	6	...	8	...	...	Not quite well.
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
469	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	(+)
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
470	Upper	Right	...	...	3	4	5	1	...	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
471	Upper	Right	...	...	3	4	5	1	...	...	...	...	8	...	...	Not quite well.
		Left	...	...	3	4	5	1	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
472	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	3	...	...	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	3	4	...	1	2	...	...	7	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	

[a] See also table on p. 283 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject* [a]—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject. [c]
			First.					Second.								
473	Upper..	Right..	1	2	3	4	5	...	...	...	...	...	8	...	...	(+)
		Left....	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
474	Upper..	Right..	...	2	3	4	5	1	...	...	...	...	8	...	...	(+)
		Left....	...	2	3	4	5	1	...	...	...	...	8	...	...	
	Lower..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
475	Upper..	Right..	...	2	3	...	5	1	...	...	6	...	8	...	...	Tongue slightly coated.
		Left....	...	2	3	...	5	1	...	...	...	...	8	...	...	
	Lower..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
476	Upper..	Right..	...	...	...	...	...	1	2	3	6	7	8	...	...	(+)
		Left....	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower..	Right..	...	...	...	...	...	1	2	3	6	7	8	...	...	
		Left....	...	...	...	...	5	1	2	3	6	...	8	...	...	
477	Upper..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower..	Right..	...	...	...	4	5	1	2	...	...	...	8	...	...	
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
478	Upper..	Right..	...	...	...	...	5	1	2	3	6	...	8	...	...	(+)
		Left....	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower..	Right..	...	...	...	4	5	1	2	3	...	...	8	...	...	
		Left....	...	...	...	4	5	1	2	3	...	...	8	...	...	
479	Upper..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left....	...	...	...	4	5	1	2	3	...	...	8	...	...	
	Lower..	Right..	...	...	3	...	5	1	2	...	6	...	8	...	...	
		Left....	...	...	3	...	5	1	2	...	6	...	8	...	...	
480	Upper..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
481	Upper..	Right..	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left....	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower..	Right..	...	...	...	...	...	1	2	3	6	7	8	...	...	
		Left....	...	...	...	...	5	1	2	3	6	...	8	...	...	
482	Upper..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
483	Upper..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
484	Upper..	Right..	...	...	3	4	5	1	...	...	...	...	8	...	...	Not quite well.
		Left....	...	2	3	...	5	1	...	...	6	...	8	...	...	
	Lower..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	

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[a] See also table on p. 283 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject*[a]—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
485	Upper	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	(+)
		Left	...	2	3	...	5	1	...	...	6	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
486	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	Weakly.
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
487	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
488	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
489	Upper	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower	Right	...	...	...	4	5	1	2	3	...	...	8	...	...	
		Left	...	...	...	4	5	1	2	3	...	...	8	...	...	
490	Upper	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
491	Upper	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower	Right	...	...	...	...	...	1	2	...	6	7	8	...	...	
		Left	...	...	...	...	...	1	2	...	6	...	8	...	...	
492	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	(?)
		Left	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	
		Left	...	...	...	4	5	1	2	3	...	...	8	...	...	
493	Upper	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
494	Upper	Right	...	...	...	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	...	4	5	1	2	3	...	...	8	...	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	...	...	
495	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
496	Upper	Right	...	...	...	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	...	4	5	1	2	3	...	...	8	...	...	
		Left	...	...	...	4	5	1	2	3	...	...	8	...	...	

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[a] See also table on p. 283 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject* [a]—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	Position.		Teeth.[b]														Condition of subject.[c]
			First.					Second.								
497	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
498	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	...	...	Tongue slightly coated.
		Left	...	...	...	...	...	1	2	3	6	7	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	...	...	
499	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	...	...	
500	Upper	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
501	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	...	...	Not quite well.
		Left	...	...	...	...	...	1	2	3	6	7	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
502	Upper	Right	...	...	...	...	...	1	2	...	6	7	8	...	...	(+)
		Left	...	...	...	...	...	1	2	...	6	7	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	...	6	...	8	...	...	
		Left	...	...	...	...	5	1	2	...	6	...	8	...	...	
503	Upper	Right	...	...	...	4	5	1	2	3	...	...	8	9	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
	Lower	Right	...	...	...	4	5	1	2	3	...	...	8	...	...	
		Left	...	...	...	4	5	1	2	3	...	...	8	...	...	
504	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
505	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
506	Upper	Right	...	...	...	4	5	1	2	3	...	...	8	...	...	(+)
		Left	...	...	...	4	5	1	2	3	...	...	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	
		Left	...	...	...	...	5	1	2	...	6	...	8	...	...	
507	Upper	Right	...	...	...	...	...	1	2	...	6	7	8	...	...	(+)
		Left	...	...	...	...	...	1	2	...	6	8	8	...	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
508	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	

[a] See also table on p. 283 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject* [a]—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
509	Upper..	Right..	...	...	3	...	...	1	2	...	6	7	8	...	...	(+)
		Left....	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower..	Right..	...	...	...	...	5	1	2	3	6	...	8	...	...	
		Left....	...	...	...	...	5	1	2	3	6	...	8	...	...	
510	Upper..	Right..	...	...	...	...	...	1	2	3	6	7	8	9	...	Some cough.
		Left....	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower..	Right..	...	...	...	...	5	1	2	3	6	...	8	9	...	
		Left....	...	...	...	...	5	1	2	3	6	...	8	9	...	
511	Upper..	Right..	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
512	Upper..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left....	...	...	3	...	...	1	2	...	6	7	8	...	...	
	Lower..	Right..	...	...	...	4	5	1	2	...	...	...	8	...	...	
		Left....	...	...	...	4	5	1	2	...	...	...	8	...	...	
513	Upper..	Right..	...	2	3	...	5	1	...	...	6	...	8	...	...	(+)
		Left....	...	2	3	...	5	1	...	...	6	...	8	...	...	
	Lower..	Right..	...	...	...	4	5	1	2	3	...	...	8	...	...	
		Left....	...	...	...	4	5	1	2	3	...	...	8	...	...	
514	....		...	...	...	...	...	All except last molars.								(+)
515	Upper..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower..	Right..	...	...	...	4	5	1	2	...	...	...	8	...	...	
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
516	Upper..	Right.	...	...	...	...	...	1	2	...	6	7	8	...	...	(+)
		Left....	...	...	...	...	...	1	2	3	6	7	8	...	...	
	Lower..	Right..	...	...	...	4	5	1	2	...	...	...	8	...	...	
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
517	....		...	...	...	...	...	All except last molars.								(+)
518	....		...	...	...	...	...	All except last molars.								(+)
519	Upper..	Right..	...	...	...	...	...	1	2	3	6	7	8	...	...	(+)
		Left....	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower..	Right..	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left....	...	...	...	...	...	1	2	3	6	7	8	9	...	
520	Upper..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower..	Right..	...	...	...	4	5	1	2	3	...	...	8	...	...	
		Left....	...	...	...	4	5	1	2	3	...	...	8	...	...	
521	Upper..	Right..	...	...	...	4	5	1	2	...	...	...	8	...	...	(+)
		Left....	...	...	...	4	5	1	2	...	...	...	8	...	...	
	Lower..	Right..	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
522	Upper..	Right..	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left....	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower..	Right..	...	...	...	...	5	1	2	3	6	...	8	...	...	
		Left....	...	...	...	4	5	1	2	3	...	...	8	...	...	

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[a] See also table on p. 283 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject*[a]—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
523	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
524	...		...	...	...	...	...	All except last molars.								(+)
525	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
526	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
527	...		...	...	...	...	...	All except last molars.								(?)
528	...		...	...	...	...	...	All except last molars.								Not quite well.
529	Upper	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
530	...		...	...	...	...	...	All except last molars.								(+)
531	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	Not long after lunch.
		Left	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
532	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	...	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
533	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	...	...	Tongue whitish.
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	5	1	2	3	...	...	8	...	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
534	...		...	...	...	...	...	...	...	...	...	...	...	...	...	(+)
535	Upper	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
536	...		...	...	...	...	...	All except last molars.								(+)
537	Upper	Right	...	...	...	...	5	1	2	...	6	...	8	...	...	Shortly after lunch.
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	
		Left	...	...	...	4	5	1	2	3	...	...	8	9	...	
538	...		...	...	...	...	...	All except last molars.								do.
539	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	...	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	

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[a] See also table on p. 283 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject* [a]—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
540	Upper	Right	...	...	...	...	...	1	2	...	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
541			...	...	...	...	...	All except last molars.								Not quite well.
542			...	...	...	...	...	All except last molars.								(+)
543			...	...	...	...	...	All except last molars.								(+)
544	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	9	...	(+)
		Left	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	...	4	5	1	2	...	...	...	8	9	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	9	...	
545	Upper	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
546			...	...	...	...	...	All except last molars.								(+)
547			...	...	...	...	...	All except last molars.								(+)
548			...	...	...	...	...	All except last molars.								(+)
549	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	...	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
550			...	...	...	...	...	All except last molars.								(+)
551			...	...	...	...	...	All except last molars.								(+)
552			...	...	...	...	...	All except last molars.								(+)
553			...	...	...	...	...	All except last molars.								(+)
554			...	...	...	...	...	All except last molars.								Tongue yellowish at base.
555			...	...	...	...	...	All except last molars.								(+)
556			...	...	...	...	...	All except last molars.								(+)
557	Upper	Right	...	...	3	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
558			...	...	...	...	...	All except last molars.								(+)
559			...	...	...	...	...	All except last molars								(+)
560			...	...	...	...	...	All except last molars.								(+)
561	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
562			...	...	...	...	...	All except last molars.								(+)
563			...	...	...	...	...	All except last molars.								(+)
564			...	...	...	...	...	All except last molars.								(+)
565			...	...	...	...	...	All except last molars.								(+)
566			...	...	...	...	...	All except last molars.								(+)

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[a] See also table on p. 283 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject* [a]—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	Position		Teeth.[b] First.					Teeth.[b] Second.								Condition of subject.[c]
567	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
568			...	...	...	...	...	All except last molars.								(+)
569			...	...	...	...	...	All except last molars.								Tongue whitish.
570			...	...	...	...	...	All except last molars.								(+)
571	Upper	Right	...	...	...	...	...	1	2	...	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
572			...	...	...	...	...	All except last molars.								(+)
573	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	Shortly after lunch.
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
	Lower	Right	...	...	3	...	...	1	2	...	...	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
574			...	...	...	...	...	All except last molars.								Tongue slightly yellowish.
575			...	...	...	...	...	All except last molars.								(+)
576			...	...	...	...	...	All except last molars.								(+)
577			...	...	...	...	...	All except last molars.								(+)
578			...	...	...	...	...	All except last molars.								(+)
579			...	...	...	...	...	All except last molars.								(+)
580			...	...	...	...	...	All except last molars.								(+)
581			...	...	...	...	...	All except last molars.								(+)
582			...	...	...	...	...	All except last molars.								(+)
583			...	...	...	...	...	All except last molars.								(+)
584			...	...	...	...	...	All except last molars.								Tongue slightly coated.
585	Upper	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
586			...	...	...	...	...	All except last molars.								(+)
587			...	...	...	...	...	All except last molars.								Tongue slightly coated.
588			...	...	...	...	...	All except last molars.								(+)
589	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	Had been running.
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	...	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
590			...	...	...	...	...	All except last molars.								(+)
591	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
592	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	Tongue whitish.
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	

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[a] See also table on p. 283 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject*[a]—Continued

(*a*) **APACHE BOYS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
593			...	...	...	...	...	All except last molars.								(+)
594			...	...	...	...	...	All except last molars.								(+)
595			...	...	...	...	...	All except last molars.								(+)
596	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	3	...	...	1	2	...	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
597			...	...	...	...	...	All except last molars (lower third molars about to appear).								(+)
598			...	...	...	...	...	All except last molars.								(+)
599			...	...	...	...	...	All except last molars.								(+)
600			...	...	...	...	...	All except last molars.								Not fully well.
601			...	...	...	...	...	All except last molars.								(+)
602			...	...	...	...	...	All except last molars.								(+)
603			...	...	...	...	...	All except last molars.								(+)
604			...	...	...	...	...	All except last molars.								(+)
605			...	...	...	...	...	All except last molars.								(+)
606			...	...	...	...	...	All except last molars.								(+)
607			...	...	...	...	...	All except last molars.								(+)
608			...	...	...	...	...	All except last molars.								(+)
609			...	...	...	...	...	All except last molars.								(+)
610			...	...	...	...	...	All 32.								(+)
611			...	...	...	...	...	All except last molars.								(+)
612			...	...	...	...	...	All except last molars.								(+)
613			...	...	...	...	...	All except last molars.								(+)
614			...	...	...	...	...	All except last molars (lower third molars about to appear).								(+)
615			...	...	...	...	...	All except last molars.								(+)
616			...	...	...	...	...	All except last molars.								(+)
617	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
618	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
619	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
620			...	...	...	...	...	All except last molars.								(+)
621			...	...	...	...	...	All except last molars.								(+)
622			...	...	...	...	...	All except last molars.								(+)
623			...	...	...	...	...	All except last molars.								(+)

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[a] See also table on p. 283 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject*[a]—Continued

(*a*) APACHE BOYS—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
624	...		...	...	...	...	...	All except last molars.								(+)
625	...		...	...	...	...	...	All except last molars.								(+)
626	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	
		Left	...	2	...	...	...	1	...	3	6	7	8	9	...	
627	...		...	...	...	...	...	All except last molars.								Sore throat.
628	...		...	...	...	...	...	All except last molars.								Not quite well.
629	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	Not quite well.
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
630	...		...	...	...	...	...	All except last molars.								(+)
631	...		...	...	...	...	...	All 32.								(+)
632	...		...	...	...	...	...	All except last molars.								(+)
633	...		...	...	...	...	...	All 32.								(+)
634	...		...	...	...	...	...	All except last molars.								(+)
635	...		...	...	...	...	...	All except last molars.								Not fully well.
636	...		...	...	...	...	...	All except last molars.								(+)
637	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	Not quite well.
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
638	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	Pains in chest.
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
639	...		...	...	...	...	...	All except last molars.								(+)
640	...		...	...	...	...	...	All 32.								(+)
641	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
642	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
643	...		...	...	...	...	...	All except last molars.								(+)
644	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	
645	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	x	

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[a] See also table on p. 283 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female).[a] *Teeth; condition of subject; breasts; menstruation*[b]

(*b*) APACHE GIRLS

Record no.	Position.		Teeth.[c]													Condition of subject.[d]	Breasts.	Menstruation.
			First.					Second.										
646	Upper..	Right.	..	2	3	4	5	..	..	..	..	..	8	..	..	Not quite well........	....	....
		Left ..	..	2	3	4	5	..	..	..	..	..	8	..	..			
	Lower..	Right.	..	2	3	4	5	1	..	..	..	..	8	..	..			
		Left ..	..	2	3	4	5	1	..	..	..	..	8	..	..			
647	Upper..	Right.	All 20.					..	..	..	..	..	8	..	..	(+)	....	....
		Left ..	All 20.					..	..	..	..	..	8	..	..			
	Lower..	Right.	All 20.					..	..	..	..	..	8	..	..			
		Left ..	All 20.					..	..	..	..	..	8	..	..			
648	Upper..	Right.	..	2	3	4	5	..	..	..	..	..	8	..	..	(+)	....	....
		Left ..	..	2	3	4	5	..	..	..	..	..	8	..	..			
	Lower..	Right.	..	2	3	4	5	1	..	..	..	..	8	..	..			
		Left ..	..	2	3	4	5	1	..	..	..	..	8	..	..			
649	Upper..	Right.	1	2	3	4	5	..	..	..	..	..	8	..	..	(+)	....	....
		Left ..	1	2	3	4	5	..	..	..	..	..	8	..	..			
	Lower..	Right.	..	2	3	4	5	1	..	..	..	..	8	..	..			
		Left ..	..	2	3	4	5	1	..	..	..	..	8	..	..			
650	Upper..	Right.	All 20.					..	..	..	..	..	8	..	..	(+)	....	....
		Left ..	All 20.					..	..	..	..	..	8	..	..			
	Lower..	Right.	All 20.					..	..	..	..	..	..	..	..			
		Left ..	All 20.					..	..	..	..	..	8	..	..			
651	Upper..	Right.	All 20.					..	..	..	..	..	..	..	..	(+)	....	....
		Left ..	All 20.					..	..	..	..	..	..	..	..			
	Lower..	Right.	All 20.					..	..	..	..	..	8	..	..			
		Left ..	All 20.					..	..	..	..	..	8	..	..			
652	Upper..	Right.	All 20.					..	..	..	..	..	8	..	..	(+)	....	....
		Left ..	All 20.					..	..	..	..	..	8	..	..			
	Lower..	Right.	All 20.					..	..	..	..	..	8	..	..			
		Left ..	All 20.					..	..	..	..	..	8	..	..			
653	Upper..	Right.	1	2	3	4	5	..	..	..	..	..	8	..	..	(+)	....	....
		Left ..	1	2	3	4	5	..	..	..	..	..	8	..	..			
	Lower..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
654	Upper..	Right.	1	2	3	..	5	..	..	..	6	..	8	..	..	(+)	....	....
		Left ..	1	2	3	..	5	..	..	..	6	..	8	..	..			
	Lower..	Right.	..	..	3	4	5	1	..	..	..	..	8	..	..			
		Left ..	..	..	3	4	5	1	..	..	..	..	8	..	..			
655	Upper..	Right.	..	2	3	4	5	1	..	..	..	..	8	..	..	(+)	....	....
		Left ..	..	2	3	4	5	1	..	..	..	..	8	..	..			
	Lower..	Right.	1	2	3	4	5	..	..	..	..	..	8	..	..			
		Left ..	1	2	3	4	5	..	..	..	..	..	8	..	..			
656	Upper..	Right.	..	..	..	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left ..	..	..	3	..	5	1	2	..	6	..	8	..	..			
	Lower..	Right.	..	..	3	4	..	1	2	..	..	..	8	..	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	..	..			

[a] The continuation of Table 4 (Female) will be found on p. 330 et. seq.

[b] See also table on p. 287 et seq.

[c] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[d] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
657	Upper..	Right.	..	..	3	4	5	1	..	..	..	..	8	..	..	(+)	....	....
		Left ..	..	..	3	4	5	1	..	..	..	..	8	..	..			
	Lower..	Right.	..	..	3	4	5	1	..	..	..	..	8	..	..			
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
658	Upper..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..	Tongue coated........	....	....
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			
659	Upper..	Right.	All 20.					..	..	..	..	..	8	..	..	(+)	....	....
		Left ..	All 20.					..	..	..	..	..	8	..	..			
	Lower..	Right.	All 20.					..	..	..	..	..	8	..	..			
		Left ..	All 20.					..	..	..	..	..	8	..	..			
660	Upper..	Right.	..	..	3	4	5	..	..	..	..	..	8	..	..	Has a cold............	....	....
		Left ..	..	2	3	4	5	1	..	..	..	..	8	..	..			
	Lower..	Right.	..	..	3	4	5	1	..	..	..	..	8	..	..			
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
661	Upper..	Right.	..	2	3	4	5	..	..	..	..	..	8	..	..	Not quite well........	....	....
		Left ..	..	2	3	4	5	..	..	..	..	..	8	..	..			
	Lower..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
662	Upper..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
663	Upper..	Right.	..	2	3	4	5	1	..	..	..	..	8	..	..	Not quite well........	....	....
		Left ..	..	2	3	4	5	1	..	..	..	..	8	..	..			
	Lower..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
664	Upper..	Right.	..	2	3	4	5	..	..	..	..	..	8	..	..	Tongue somewhat coated.	....	....
		Left ..	..	2	3	4	5	..	..	..	..	..	8	..	..			
	Lower..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
665	Upper..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower..	Right.	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left ..	..	..	..	4	5	1	2	3	..	..	8	..	..			
666	Upper..	Right.	..	2	3	4	5	1	..	..	..	..	8	..	..	(+)	....	....
		Left ..	..	2	3	4	5	1	..	..	..	..	8	..	..			
	Lower..	Right.	1	2	3	4	5	..	..	..	..	..	8	..	..			
		Left ..	1	2	3	4	5	..	..	..	..	..	8	..	..			
667	Upper..	Right.	..	..	3	..	5	1	2	..	6	..	8	..	..	(+)	....	....
		Left ..	..	..	3	..	5	1	2	..	6	..	8	..	..			
	Lower..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			

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[a] See also table on p. 287 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(b) APACHE GIRLS—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
668	Upper	Right		2	3		5	1			6		8			(+)		
		Left		2	3		5	1			6		8					
	Lower	Right				4	5	1	2	3			8					
		Left				4	5	1	2	3			8					
669	Upper	Right			3	4	5	1					8			(+)		
		Left			3	4	5	1	2				8					
	Lower	Right			3	4	5	1	2				8					
		Left			3	4	5	1	2				8					
670	Upper	Right			3	4	5	1	2				8			Stomach disordered		
		Left			3	4	5	1	2				8					
	Lower	Right			3	4	5	1	2				8					
		Left			3	4	5	1	2				8					
671	Upper	Right			3	4	5	1	2				8			(+)		
		Left			3	4	5	1	2				8					
	Lower	Right			3	4	5	1	2				8					
		Left			3	4	5	1	2				8					
672	Upper	Right			3	4	5	1	2				8			(+)		
		Left			3	4	5	1	2				8					
	Lower	Right			3	4	5	1	2				8					
		Left			3	4	5	1	2				8					
673	Upper	Right			3	4	5	1	2				8			(+)		
		Left			3	4	5	1	2				8					
	Lower	Right				4	5	1	2	3			8					
		Left			3	4	5	1	2				8					
674	Upper	Right					5	1	2	3	6		8			Systolic murmur		
		Left					5	1	2	3	6		8					
	Lower	Right				4	5	1	2	3			8					
		Left					5	1	2	3	6		8					
675	Upper	Right						1	2	3	6	7	8			(+)		
		Left						1	2	3	6	7	8					
	Lower	Right					5	1	2	3	6		8	9				
		Left						1	2	3	6	7	8	9				
676	Upper	Right			3			1	2		6	7	8			(+)		
		Left						1	2		6	7	8					
	Lower	Right				4	5	1	2				8					
		Left					5	1	2				8					
677	Upper	Right			3		5	1	2				8			Not quite well		
		Left			3			1	2				8					
	Lower	Right			3			1	2				8					
		Left			3			1	2		6	7	8					
678	Upper	Right					5	1	2	3	6		8			(+)		
		Left			3		5	1	2				8					
	Lower	Right			3	4	5	1	2				8					
		Left			3	4	5	1	2				8					

---

[a] See also table on p. 287 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (= x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	Position.		Teeth.[b]		Condition of subject.[c]	Breasts.	Menstruation.
			First.	Second.			
679	....		.. ..	All except last molars.	(+)	....	....
680	Upper	Right	.. .. 3 4 5	1 2 .. .. .. 8	(+)	....	....
		Left	.. .. 3 4 5	1 2 .. .. .. 8			
	Lower	Right	.. .. 3 4 5	1 2 .. .. .. 8			
		Left	.. .. 3 4 5	1 2 .. .. .. 8			
681	Upper	Right	 5	1 2 .. 6 .. 8	(+)	....	....
		Left	.. .. 3 4 5	1 2 .. .. .. 8			
	Lower	Right	.. .. .. 4 5	1 2 .. .. .. 8			
		Left	.. .. 3 4 5	1 2 .. .. .. 8			
682	Upper	Right	.. .. 3	1 2 .. 6 7 8	(+)	....	....
		Left	.. .. 3	1 2 .. 6 .. 8			
	Lower	Right	.. ..	1 2 3 6 7 8			
		Left	 5	1 2 3 6 .. 8			
683	Upper	Right	 5	1 2 3 6 .. 8	(+)	....	....
		Left	.. ..	1 2 .. 6 7 8			
	Lower	Right	 5	1 2 3 6 .. 8 9 ..			
		Left	.. ..	1 2 3 6 .. 8 9 ..			
684	Upper	Right	.. .. 3 .. 5	1 2 .. 6 .. 8	Sore throat........	....	....
		Left	.. .. 3 .. 5	1 2 .. 6 .. 8			
	Lower	Right	.. .. .. 4 5	1 2 .. .. .. 8			
		Left	.. .. .. 4 5	1 2 3 .. .. 8			
685	Upper	Right	.. ..	1 2 .. 6 7 8	(+)	....	....
		Left	 5	1 2 3 6 .. 8			
	Lower	Right	 5	1 2 3 6 .. 8			
		Left	 5	1 2 3 6 .. 8			
686	Upper	Right	 5	1 2 3 .. .. 8	(+)	....	....
		Left	.. .. .. 4 5	1 2 3 .. .. 8			
	Lower	Right	 5	1 2 3 6 .. 8			
		Left	 5	1 2 3 6 .. 8			
687	Upper	Right	.. ..	1 2 3 6 7 8	(+)	....	....
		Left	 5	1 2 3 6 .. 8			
	Lower	Right	.. ..	1 2 3 6 7 8 9 ..			
		Left	 5	1 2 3 6 .. 8 9 ..			
688	Upper	Right	.. .. 3 4 5	1 2 .. .. .. 8	(+)	....	....
		Left	.. .. 3 4 5	1 2 .. .. .. 8			
	Lower	Right	 5	1 2 3 6 .. 8 ..			
		Left	 5	1 2 3 6 .. 8			
689	Upper	Right	.. .. 3 .. 5	1 2 .. 6 .. 8	(+)	....	....
		Left	.. .. 3 .. 5	1 2 .. 6 .. 8			
	Lower	Right	.. .. 3	1 2 .. 6 .. 8			
		Left	.. .. 3 4 5	1 2 .. .. .. 8			

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[a] See also table on p. 287 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation* [a]—Continued

(*b*) APACHE GIRLS—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
690	Upper..	Right.	..	..	..	4	5	1	2	3	..	..	8	..	..	(+)	....	....
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	9	..			
691	Upper..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..	(?)	....	....
		Left ..	..	..	..	..	..	1	2	3	6	7	8	..	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
692	Upper..	Right.	..	..	3	..	..	1	2	..	6	7	8	..	..	(+)	....	....
		Left ..	..	..	3	..	..	1	2	..	6	7	8	..	..			
	Lower..	Right.	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left ..	..	..	..	4	5	1	2	3	..	..	8	..	..			
693	Upper..	Right.	..	..	3	..	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower..	Right.	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
694	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	..	..	(+)	....	....
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	9	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	9	..			
695	Upper..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..	(+)	....	....
		Left ..	..	..	3	..	5	1	2	..	6	..	8	..	..			
	Lower..	Right.	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left ..	..	..	..	4	5	1	2	3	..	..	8	..	..			
696	Upper..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..	Had been running....	....	....
		Left ..	..	..	..	..	..	1	2	..	6	..	8	..	..			
	Lower ..	Right	..	..	..	..	5	1	2	3	6	..	8	9	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
697	Upper..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..	(+)	....	....
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			
698	Upper..	Right.	..	..	3	..	5	1	2	..	6	..	8	..	..	Not quite well........	....	....
		Left ..	..	..	3	..	5	1	2	..	6	..	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			
699	Upper..	Right.	..	..	3	..	5	1	2	..	6	..	8	..	..	Strawberry tongue...	....	....
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower..	Right.	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left ..	..	..	..	4	5	1	2	3	..	..	8	..	..			
700	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	..	..	(+)	....	....
		Left ..	..	..	..	..	..	1	2	3	6	7	8	..	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	..	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			

[a] See also table on p. 287 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation* [a]—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
701	Upper	Right.	..	2	3	4	5	1	..	..	..	..	8	..	..	(+)	....	....
		Left	..	2	3	4	5	1	..	..	..	..	8	..	..			
	Lower	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
702	Upper	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..	Tongue whitish	....	....
		Left	..	..	..	..	..	1	2	3	6	7	8	..	..			
	Lower	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left	..	..	..	..	5	1	..	3	6	..	8	9	..			
703	Upper	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..	(+)	....	....
		Left	..	..	..	..	5	1	2	3	6	..	8	..	..			
	Lower	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left	..	..	..	..	5	1	2	3	6	..	8	..	..			
704	....		..	..	..	..	..	All except last molars.								Tongue whitish	....	....
705	....		..	..	..	..	..	do								Not fully well	....	....
706	....		..	..	..	..	..	do								(+)	....	....
707	Upper	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left	..	..	..	..	5	1	2	..	..	..	8	..	..			
	Lower	Right.	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left	..	..	..	..	5	1	2	3	6	..	8	..	..			
708	Upper	Right.	..	..	..	..	5	1	2	3	6	..	8	9	..	(+)	....	....
		Left	..	..	..	..	..	1	2	3	6	7	8	9	..			
	Lower	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left	..	..	..	..	..	1	2	3	6	7	8	9	..			
709	Upper	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	Drank coffee	....	....
		Left	..	..	..	..	..	1	2	..	6	7	8	9	..			
	Lower	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left	..	..	..	..	..	1	2	3	6	7	8	..	..			
710	Upper	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	(+)	....	....
		Left	..	..	..	..	5	1	2	3	6	..	8	9	..			
	Lower	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left	..	..	..	..	..	1	2	3	6	7	8	9	..			
711	Upper	Right.	..	..	3	..	5	1	2	..	6	..	8	..	..	(+)	....	....
		Left	..	..	..	..	5	1	2	3	6	..	8	..	..			
	Lower	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left	..	..	..	..	..	1	2	3	6	7	8	..	..			
712	Upper	Right.	..	..	..	..	..	1	2	3	6	7	8	..	..	Cold morning	....	....
		Left	..	..	..	..	5	1	2	3	6	..	8	..	..			
	Lower	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left	..	..	..	..	..	1	2	3	6	7	8	..	..			
713	Upper	Right.	..	..	3	..	5	1	2	..	6	..	8	..	..	(+)	....	....
		Left	..	..	3	..	5	1	2	..	6	..	8	..	..			
	Lower	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left	..	..	..	..	5	1	2	3	6	..	8	..	..			

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[a] See also table on p. 287 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(b) APACHE GIRLS—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
714	Upper..	Right.	..	..	..	..	5	1	2	..	6	..	8	..	..	(+)	....	....
		Left ..	..	..	3	..	5	1	2	..	6	..	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			
715	....		..	..	..	..	..	All except last molars.								Not quite well........	....	....
716	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	(+)	....	....
		Left ..	..	..	..	..	..	1	2	3	6	..	8	9	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	9	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	9	..			
717	Upper..	Right.	..	..	..	..	5	1	2	..	6	..	8	..	..	(+)	....	....
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower..	Right.	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
718	Upper..	Right.	..	..	..	..	5	1	2	3	6	..	8	9	..	(+)	....	....
		Left ..	..	..	..	..	5	1	2	3	6	..	8	9	..			
	Lower..	Right	..	..	..	..	5	1	2	3	6	..	8	9	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	..	..			
719	Upper..	Right.	..	..	..	..	5	1	2	3	6	..	8	9	..	(+)	....	....
		Left ..	..	..	..	..	5	1	2	..	6	..	8	..	..			
	Lower..	Right.	..	..	..	4	5	1	2	3	..	..	8	9	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	9	..			
720	....		..	..	..	..	..	All except last molars.								(+)	....	....
721	....		..	..	..	..	..	.....do...........								Not quite well........	....	....
722	Upper..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..	(+)	....	....
		Left ..	..	..	..	..	..	1	2	3	6	7	8	..	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	..	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	..	..			
723	....		..	..	..	..	..	All except last molars.								(+)	Very small.	....
724	....		..	..	..	..	..	.....do...........								Not quite well........	....	....
725	....		..	..	..	..	..	.....do...........								(+)	....	....
726	Upper..	Right.	..	..	..	..	5	1	2	3	..	..	8	..	..	(+)	....	....
		Left ..	..	..	..	..	5	1	2	3	..	..	8	..	..			
	Lower..	Right.	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left ..	..	..	..	4	5	1	2	3	..	..	8	..	..			
727	....		..	..	..	..	..	All except last molars.								(+)	....	....
728	Upper..	Right.	..	..	..	4	5	1	2	3	..	..	8	..	..	(+)	....	....
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	9	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			

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[a] See also table on p. 287 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(b) APACHE GIRLS—Continued

Record no.	Position.		Teeth.[b]		Condition of subject.[c]	Breasts.	Menstruation.
			First.	Second.			
729				All except last molars.	Tongue somewhat coated.	Very small.	
730				do	(+)		
731				do	Tongue coated		
732	Upper	Right.	.. ..	1 2 3 6 7 8 9 ..	(+)		
		Left	.. ..	1 2 3 6 7 8 9 ..			
	Lower	Right.	.. ..	1 2 3 6 7 8 9 ..			
		Left	.. ..	1 2 3 .. 7 8 9 ..			
733				All except last molars.	(+)	Small.	
734	Upper	Right.	.. .. 3	1 2 .. 6 7 8	Tongue slightly coated		
		Left	.. ..	1 2 .. 6 7 8			
	Lower	Right.	.. ..	1 2 3 6 7 8 9 ..			
		Left	.. .. .. 4 ..	1 2 3 .. 7 8 9 ..			
735				All except last molars.	(+)	Very small.	Just begun.
736				do	(+)	Small.	
737				do	(+)	Very small.	
738				do	(+)		
739				do	(+)	Small.	Yes.
740				do	Tongue slightly coated	Very small.	
741	Upper	Right.	.. ..	1 2 3 6 7 8	(+)		
		Left	.. ..	1 2 3 6 7 8			
	Lower	Right.	.. ..	1 2 3 6 7 8 9 ..			
		Left	.. ..	1 2 3 6 7 8			
742				All except last molars.	(+)	Very small.	
743				do	(+)		
744	Upper	Right.	.. ..	1 2 3 6 7 8	(+)	do	Yes.
		Left	.. ..	1 2 3 6 7 8			
	Lower	Right.	 5	1 2 3 6 .. 8 9 ..			
		Left	 5	1 2 3 6 .. 8			
745				All except last molars.	(+)	do	
746				do	(+)	do	
747				do	Tongue somewhat coated.		
748				do	(+)		Yes.
749				do	(+)	Small.	
750				do	(+)		

[a] See also table on p. 287 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*b*) APACHE GIRLS—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
751	Upper	Right.	..	..	..	..	..	1	..	3	6	7	8	9	..	(+)	....	....
		Left.	..	..	..	..	..	1	2	3	6	7	8	9	..			
	Lower	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left.	..	..	..	..	..	1	2	3	6	7	8	9	..			
752	....		..	..	..	..	..	All except last molars.								(+)	Very small.	....
753	....		..	..	..	..	..	do								Slightly nervous	....	....
754	....		..	..	..	..	..	do								Not quite well	....	....
755	....		..	..	..	..	..	do								Tongue slightly coated.	....	First time this month.
756	Upper	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	(+)	Small	....
		Left.	..	..	..	..	..	1	2	3	6	7	8	..	..			
	Lower	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left.	..	..	..	..	..	1	2	3	6	7	8	9	..			
757	....		..	..	..	..	..	All except last molars.								Tongue slightly coated.	....	....
758	....		..	..	..	..	..	do								(+)	Very small.	....
759	....		..	..	..	..	..	do								(+)	Small	Yes, for 6 months.
760	....		..	..	..	..	..	do								(+)	Very small.	Yes.
761	....		..	..	..	..	..	do								(+)	do	Yes, for 3 months.
762	....		..	..	..	..	..	do								(+)	do	Yes, for 15 months.
763	....		..	..	..	..	..	do								(+)	....	....
764	....		..	..	..	..	..	do								(+)	Very small.	....
765	....		..	..	..	..	..	do								Tongue somewhat coated.	....	....
766	....		..	..	..	..	..	do								(+)	Small	Yes.
767	....		..	..	..	..	..	do								(+) Cold morning	do	Yes for 5 months.
768	....		..	..	..	..	..	do								(+)	Moderate.	Yes, for 11 months.
769	....		..	..	..	..	..	do								(+)	Small	....
770	....		..	..	..	..	..	do								Not quite well	....	....
771	....		..	..	..	..	..	do								Tongue slightly coated.	....	....
772	....		..	..	..	..	..	do								(+)	Moderate.	Yes, for 14 months.
773	....		..	..	..	..	..	do								(+)	Very small.	....

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[a] See also table on p. 287 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
774								All except last molars.								Had no breakfast		
775								do.								(+)	Small	
776								do.								(+)	Very small.	
777								do.								(+)	Small	Yes, for 4 months.
778								do.								(+)	do.	Yes, for about 2 years.
779								do.								(+)	do.	Yes, for 6 months.
780								do.								(+) Cold morning	do.	
781	Upper	Right.					5	1	2	3	6	..	8	9	..	(+)	Moderate.	
		Left.						1	2	3	6	7	8	9	..			
	Lower	Right.						1	2	3	6	7	8	9	..			
		Left.					5	1	2	3	6	..	8	9	..			
782								All except last molars.								Tongue whitish	do.	Yes.
783								do.								(+)	do.	do.
784								do.								(+)	Very small.	Yes, for 12 months.
785								do.								Not quite well (hysteric spells).	do.	Yes.
786								do.								(+)	do.	do.
787								do.								(+) Cold morning	do.	
788								do.								(+)	Moderate.	Yes, for 6 months.
789								do.								Not well		Yes.
790								do.								(+) Cold morning	Small	
791								do.								(+)	Moderate.	Yes, over 18 months.
792	Upper	Right.						1	2	3	6	7	8	9	..	(+)	Small	Yes, over 18 months.
		Left.						1	2	..	6	7	8	9	..			
	Lower	Right.						1	2	3	6	7	8	9	..			
		Left.						1	2	3	6	7	8	9	..			
793								All except last molars.								(+)	do.	Yes, for 13 months.
794								do.								(+)	do.	Yes, for 6 months.
795								do.								(+)	Moderate.	Yes, for 2 months.
796								do.								(+)	Small	Yes.

---

[a] See also table on p. 287 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	Position.	Teeth.[b] First.	Teeth.[b] Second.	Condition of subject.[c]	Breasts.	Menstruation.
797			All except last molars.	(+)	Small	Yes, for 10 months.
798			do.	(+)	do.	Yes, over 18 months.
799			do.	(+)		Yes.
800			do.	(+)		
801			do.	(+)	Moderate.	
802			do.	(+)		
803			do.	(+)	Small	do.
804			do.	(+)	do.	Yes, for 4 months.
805			do.	(+)	do.	Yes, over 18 months.
806			do.	(?)		Yes.
807			do.	Heart not normal	Moderate.	do.
808			do.	(+)	Small	
809			do.	(+)		do.
810			do.	(+)	Small	Yes, over 18 months.
811			do.	(+)	do.	Yes, for 7 months.
812			do.	(+)	Moderate.	Yes, over 18 months.
813			do.	(+)	do.	do.
814			do.	Not well	Small	Yes.
815			do.	(+)	Moderate.	Yes, over 18 months.
816	Upper, Right		1 2 3 6 7 8 9 ..	(+)	do.	Yes.
	Upper, Left		1 2 3 6 7 8 9 ..			
	Lower, Right		1 2 3 6 7 8 9 x			
	Lower, Left		1 2 3 6 7 8 9 x			
817			All except last molars.	(+)	do.	do.
818	Upper, Right		1 2 3 6 7 8 9 ..	(+)	do.	do.
	Upper, Left		1 2 3 6 7 8 9 ..			
	Lower, Right		1 2 3 6 7 8 9 x			
	Lower, Left		1 2 3 6 7 8 9 x			
819			All except last molars.	(+)	Small	do.
820			do.	(+)	do.	do.

---

[a] See also table on p. 287 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*b*) APACHE GIRLS—Continued

Record no.	Position.		Teeth.[b] First.	Teeth.[b] Second.	Condition of subject.[c]	Breasts.	Menstruation.
821				All except last molars.	(+)	Small	Yes, for 10 months.
822				do	(+)	do	Yes.
823				All 32.	(+)	do	Yes, over 18 months.
824				All except last molars.	(+)	do	Yes.
825				do	(+)	Moderate.	Yes, over 18 months.
826	Upper	Right		1 2 3 6 7 8 9 ..	(+)	Small	Yes, for 9 months.
		Left		1 2 3 6 7 8 9 ..			
	Lower	Right		1 2 3 6 7 8 9 x			
		Left		1 2 3 6 7 8 9 x			
827				All 32.	(+)	do	Yes, over 18 months.
828				All except last molars.	(+)	do	Yes, over 2 years.
829				do	Had been out playing.	Moderate.	Yes, over 18 months.
830				do	Not well	do	do.
831				do	(+)	Small	Yes, for 11 months.
832				do	(+)	Moderate.	Yes, over 2 years.
833				do	(+)	Small	Yes.
834				do	(+)	Moderate.	Yes, for 5 months.
835				do	(+)	Small	Yes, over 18 months.
836	Upper	Right		1 2 3 6 7 8 9 ..	(+)	do	do.
		Left		1 2 3 6 7 8 9 ..			
	Lower	Right		1 2 3 6 7 8 9 x			
		Left		1 2 3 6 7 8 9 x			
837				All except last molars	(+)	Moderate.	do.
838				do	(+)	do	do.
839				do	Tongue whitish	Small	
840				do	(+)	do	(?)
841				do	(+)	Moderate.	Yes.

---

[a] See also table on p. 287 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7 posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*b*) **APACHE GIRLS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
842	....		All except last molars.					All except last molars.								Not well..............	Small..	Yes, over 18 months.
843	....		.....do....					.....do............								(+)	Moderate.	do.
844	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	(+)	....do..	do.
		Left..	..	..	..	..	..	1	2	3	6	7	8	9	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	x			
		Left..	..	..	..	..	..	1	2	3	6	7	8	9	x			
845	....		..	..	..	..	..	All except last molars.								(+)	Small..	Yes, for 9 months.
846	....		..	..	..	..	..	All 32.								(+)	Moderate.	Yes, over 18 months.

TABLE 4 (Male).[d] *Teeth; condition of subject*[a]—Continued

(*c*) **PIMA BOYS**

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
81	....		All 20.					...	...	...	...	...	...	...	...	(+)
82	....		All 20.					...	...	...	...	...	...	...	...	Crying.
83	....		All 20.					...	...	...	...	...	...	...	...	(+)
84	....		All 20.					...	...	...	...	...	...	...	...	(+)
85	....		All 20.					...	...	...	...	...	...	...	...	(+)
86	....		All 20.					...	...	...	...	...	...	...	...	(+)
87	....		All 20.					...	...	...	...	...	...	...	...	(+)
88	Upper..	Right..	1	2	3	4	5	...	...	...	...	...	8	...	...	(+)
		Left....	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower..	Right..	1	2	3	4	5	...	...	...	...	...	8	...	...	
		Left....	1	2	3	4	5	...	...	...	...	...	8	...	...	
89	Upper..	Right..	1	2	3	4	5	...	...	...	...	...	...	...	...	(+)
		Left....	1	2	3	4	5	...	...	...	...	...	...	...	...	
	Lower..	Right..	1	2	3	4	5	...	...	...	...	...	8	...	...	
		Left....	1	2	3	4	5	...	...	...	...	...	...	...	...	
90	....		All 20.					...	...	...	...	...	...	...	...	(+)
91	Upper..	Right..	1	2	3	4	5	...	...	...	...	...	8	...	...	(+)
		Left....	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower..	Right..	...	...	3	4	5	1	...	...	...	...	8	...	...	
		Left....	...	2	3	4	5	1	...	...	...	...	8	...	...	

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[a] See also table on p. 287 et seq. (for girls), and on p. 292 et seq. (for boys).

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

[d] The first part of Table 4 (Male) will be found on p. 299 et seq.

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject*[a]—Continued

(*c*) **PIMA BOYS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
92	Upper	Right	1	2	3	4	5	...	...	...	...	...	...	...	...	(+)
		Left	1	2	3	4	5	...	...	...	...	...	...	...	...	
	Lower	Right	...	2	3	4	5	1	...	...	...	...	...	...	...	
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
93	Upper	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	(+)
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	...	...	...	...	8	...	...	
94	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	(+)
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
95	Upper	Right	1	2	3	4	5	...	...	...	...	...	...	...	...	(+)
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	1	2	3	4	5	...	...	...	...	...	...	...	...	
		Left	1	2	3	4	5	...	...	...	...	...	...	...	...	
96	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	Tongue coated.
		Left	...	...	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
97	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	(+)
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
98	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	(+
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	...	...	...	...	8	...	...	
99	Upper	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	(+)
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
100	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	Not quite well.
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
101	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	do.
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
102	Upper	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	(+)
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
103	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	(+)
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	

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[a] See also table on p. 292 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar, 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject*[a]—Continued

(c) **PIMA BOYS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
104	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	Sickly.
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
105	Upper	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	Tongue slightly furred.
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
106	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	...	...	1	2	...	6	7	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
107	Upper	Right	...	...	3	4	5	1	...	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
108	...		...	...	?	...	...	...	?	...	...	...	...	...	...	Headache.
109	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	Soon after lunch.
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
110	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	...	4	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
111	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
112	Upper	Right	1	2	3	4	5	...	...	...	...	...	8	...	...	(+)
		Left	1	2	3	4	5	...	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	...	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	...	...	...	...	8	...	...	
113	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
114	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	...	...	8	...	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
115	Upper	Right	...	2	3	4	5	1	...	...	...	...	8	...	...	Tongue slightly coated.
		Left	...	2	3	4	5	1	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	

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[a] See also table on p. 292 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6 anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject*[a]—Continued

(*c*) **PIMA BOYS**—Continued

Record no.	Position.		Teeth.[b]														Condition of subject.[c]
			First.					Second.									
116	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
117	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
118	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	...	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	...	...	
119	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
120	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
121	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
122	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	...	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	...	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
123	Upper	Right	...	...	3	4	5	1	...	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	...	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	2	3	4	5	1	2	...	...	...	8	...	...	
124	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
125	Upper	Right	...	...	3	...	5	1	2	...	...	...	8	...	...	Tongue slightly coated.
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower	Right	...	...	...	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	...	4	5	1	2	...	6	...	8	...	...	
126	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	do.
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	

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[a] See also table on p. 292 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject* [a]—Continued

(*c*) **PIMA BOYS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
127	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
128	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
129	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	Exercised shortly before.
		Left	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	...	4	5	1	2	3	...	...	8	9	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
130	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	...	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	...	4	5	1	2	...	...	...	8	...	...	
131	Upper	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
132	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	Tongue slightly coated.
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	...	4	5	1	2	3	...	...	8	...	...	
133	Upper	Right	...	...	...	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	...	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
134	Upper	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
135	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+) Exercised shortly before.
		Left	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	...	4	5	1	2	3	...	...	8	...	...	
136	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
137	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
138	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	

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[a] See also table on p. 292 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject* [a]—Continued

(*c*) **PIMA BOYS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
139	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	...	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	2	...	4	5	1	...	...	...	...	8	...	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
140	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
141	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
142	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
143	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
144	Upper	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
145	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
146	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
147	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	Not well.
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
148	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
149	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
150	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	

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[a] See also table on p. 292 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject*[a]—Continued

(*c*) **PIMA BOYS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
151	Upper	Right	...	...	...	...	...	1	2	...	6	7	8	...	...	(+)
		Left	...	...	...	...	...	1	2	...	6	7	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	...	...	
152	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	3	...	...	1	2	...	6	7	8	...	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
153	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	...	...	(+)
		Left	...	...	3	...	5	1	2	...	6	...	8	...	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	...	8	...	...	
		Left	...	...	3	...	5	1	2	...	6	...	8	9	...	
154	Upper	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	(+)
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
	Lower	Right	...	...	3	4	5	1	2	...	...	...	8	...	...	
		Left	...	...	3	4	5	1	2	...	...	...	8	...	...	
155	...		All except last molars.													Tongue slightly coated.
156	...		All except last molars.													do.
157	Upper	Right	...	...	3	...	...	1	2	...	6	7	8	9	...	do.
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
158	...		All except last molars.													(+)
159	...		All except last molars.													(+)
160	Upper	Right	...	...	...	...	5	1	2	...	6	...	8	9	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
161	...		All except last molars.													(+)
162	...		All except last molars.													(+)
163	...		All except last molars.													(+)
164	...		All except last molars.													(+)
165	...		All except last molars.													(+)
166	...		All except last molars.													(+)
167	...		All except last molars.													(+)
168	...		All except last molars.													(+)
169	...		All except last molars.													(+)
170	Upper	Right	...	...	3	...	5	1	2	...	6	...	8	9	...	(+)
		Left	...	...	3	...	5	1	2	...	6	...	8	9	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
171	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	Tongue slightly coated.
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
172	...		All except last molars.													(+)
173	...		All except last molars.													Not quite well.

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[a] See also table on p. 292 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject* [a]—Continued

(*c*) **PIMA BOYS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]
			First.					Second.								
174	Upper	Right	...	...	...	...	5	1	2	3	6	...	8	...	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	...	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	...	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	...	...	
175	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	Tongue coated yellowish.
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	5	1	2	3	6	...	8	9	...	
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
176	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	...	...	(+)
		Left	...	...	...	...	5	1	2	3	6	...	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
177			All except last molars.													Tongue slightly coated.
178			...	...	...	...	...	All except last molars.								(+)
179			...	...	...	...	...	All except last molars.								(+)
180			...	...	...	...	...	...	...	...	...	...	...	...	...	Tongue slightly coated.
181	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	...	...	(+)
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
182			...	...	...	...	...	All except last molars.								(+)
183			...	...	...	...	...	All except last molars.								Tongue coated.
184			...	...	...	...	...	All except last molars.								(+)
185			...	...	...	...	...	All except last molars.								Tongue slightly coated.
186	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	Not quite well.
		Left	...	...	...	...	...	1	2	3	6	7	8	...	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
187			...	...	...	...	...	All except last molars.								(+)
188	Upper	Right	...	...	...	...	...	1	2	3	6	7	8	9	...	(+) Exercised one-half hour before.
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
	Lower	Right	...	...	...	...	...	1	2	3	6	7	8	9	x	
		Left	...	...	...	...	...	1	2	3	6	7	8	9	...	
189			...	...	...	...	...	All except last molars.								(+)
190			...	...	...	...	...	All except last molars.								(+)
191			...	...	...	...	...	All except last molars.								Tongue coated.
192			...	...	...	...	...	All except last molars.								(+)
193			...	...	...	...	...	All except last molars.								(+)
194			...	...	...	...	...	All except last molars.								(+)
195			...	...	...	...	...	All except last molars.								(+)
196			...	...	...	...	...	All except last molars.								Tongue slightly coated.
197			...	...	...	...	...	All except last molars.								(+)
198			...	...	...	...	...	All except last molars.								(+)
199			...	...	...	...	...	All except last molars.								Tongue slightly coated.
200			...	...	...	...	...	All except last molars.								(+)
201			...	...	...	...	...	All except last molars.								Not well.

[a] See also table on p. 292 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Male). *Teeth; condition of subject*[a]—Continued

(*c*) **PIMA BOYS**—Continued

Record no.	Position.		Teeth.[b] First.	Teeth.[b] Second.								Condition of subject.[c]
202				All 32.								(+)
203	Upper	Right		1	2	3	6	7	8	9	...	Not fully well.
		Left		1	2	3	6	7	8	9	...	
	Lower	Right		1	2	3	6	7	8	9	x	
		Left		1	2	3	6	7	8	9	...	
204				All except last molars.								Tongue coated.
205				All except last molars.								do.
206	Upper	Right		1	2	3	6	7	8	9	...	Tongue slightly coated.
		Left		1	2	3	6	7	8	9	...	
	Lower	Right		1	2	3	6	7	8	9	x	
		Left		1	2	3	6	7	8	9	x	
207				All except last molars.								(+)
208				All except last molars.								(+)
209				All except last molars.								(+)
210				All except last molars.								Tongue coated.
211				All 32.								(+)
212				All except last molars.								Tongue slightly coated.
213				All except last molars.								Stomach disordered.
214				All except last molars.								Tongue coated.
215				All except last molars.								(+)
216				All except last molars.								(+)
217				All except last molars (left lower third molar about to appear).								(+)
218				All except last molars.								Tongue slightly coated.
219				All 32.								Sore throat.
220				All except last molars.								Tongue coated.

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[a] See also table on p. 292 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

TABLE 4 (Female).[a] *Teeth; condition of subject; breasts; menstruation*[b]—Continued.

(*d*) **PIMA GIRLS**

Record no.	Position.	Teeth.[c] First.	Teeth.[c] Second.	Condition of subject.[d]	Breasts.	Menstruation.
221		All 20.		(+)		
222		All 20.		(+)		
223		All 20.		Slightly nervous		
224		All 20.		(+)		
225		All 20.		(+)		
226		All 20.		(+)		
227		All 20.		(+)		
228		All 20.		Gets excited		

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[a] The first part of Table 4 (Female) will be found on p. 310 et seq.

[b] See also table on p. 295 et seq.

[c] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[d] Symbol + means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation* [a]—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
229	..		All 20					..	..	..	..	..	..	..	..	(+)		
230	Upper	Right	1	2	3	4	5	..	..	..	..	..	8	..	..	Somewhat weak	..	..
		Left	1	2	3	4	5	..	..	..	..	..	8	..	..			
	Lower	Right	..	2	3	4	5	1	..	..	..	..	8	..	..			
		Left	..	2	3	4	5	1	..	..	..	..	8	..	..			
231	Upper	Right	All 20					..	..	..	..	..	..	..	..	(+)		
		Left	All 20					..	..	..	..	..	..	..	..			
	Lower	Right	All 20					..	..	..	..	..	8	..	..			
		Left	All 20					..	..	..	..	..	8	..	..			
232	Upper	Right	All 20					..	..	..	..	..	8	..	..	Tongue coated	..	..
		Left	All 20					..	..	..	..	..	..	..	..			
	Lower	Right	All 20					..	..	..	..	..	8	..	..			
		Left	All 20					..	..	..	..	..	8	..	..			
233	Upper	Right	All 20					..	..	..	..	..	8	..	..	(+)		
		Left	All 20					..	..	..	..	..	8	..	..			
	Lower	Right	All 20					..	..	..	..	..	8	..	..			
		Left	All 20					..	..	..	..	..	8	..	..			
234	Upper	Right	All 20					..	..	..	..	..	8	..	..	(+)		
		Left	All 20					..	..	..	..	..	8	..	..			
	Lower	Right	All 20					..	..	..	..	..	8	..	..			
		Left	All 20					..	..	..	..	..	8	..	..			
235	..		..	..	..	..	..	..	..	..	..	..	..	..	..	Not fully well	..	..
236	..		..	..	..	..	..	..	..	..	..	..	..	..	..	do	..	..
237	Upper	Right	..	2	3	4	5	1	..	..	..	..	8	..	..	(+)		
		Left	..	2	3	4	5	1	..	..	..	..	8	..	..			
	Lower	Right	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
238	Upper	Right	..	..	3	4	5	1	..	..	..	..	8	..	..	(+)		
		Left	..	..	3	4	5	1	..	..	..	..	8	..	..			
	Lower	Right	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
239	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	Not well	..	..
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
240	Upper	Right	All 20.					..	..	..	..	..	8	..	..	Ophthalmia	..	..
		Left	All 20.					..	..	..	..	..	8	..	..			
	Lower	Right	All 20.					..	..	..	..	..	8	..	..			
		Left	All 20.					..	..	..	..	..	8	..	..			
241	Upper	Right	..	2	3	4	5	1	..	..	..	..	8	..	..	(+)		
		Left	..	..	3	4	5	1	..	..	..	..	8	..	..			
	Lower	Right	..	..	..	..	..	1	2	..	..	..	8	..	..			
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			

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[a] See also table on p. 295 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	Position.			Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
				First.					Second.										
242	Upper	Right		..	2	3	4	5	1	..	..	..	..	8	..	..	(+)		
		Left		..	2	3	4	5	1	..	..	..	..	8	..	..			
	Lower	Right		..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left		..	..	3	4	5	1	2	..	..	..	8	..	..			
243	Upper	Right		..	..	3	4	5	1	2	..	..	..	8	..	..	Tongue slightly coated.	....	....
		Left		..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right		..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left		..	..	3	4	5	1	2	..	..	..	8	..	..			
244	Upper	Right		1	2	3	4	5	..	..	..	..	..	8	..	..	(+)		
		Left		..	2	3	4	5	1	..	..	..	..	8	..	..			
	Lower	Right		..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left		..	..	3	4	5	1	2	..	..	..	8	..	..			
245	Upper	Right		..	2	3	4	5	1	..	..	..	..	8	..	..	(+)		
		Left		..	2	3	4	5	1	..	..	..	..	8	..	..			
	Lower	Right		..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left		..	..	3	4	5	1	2	..	..	..	8	..	..			
246	Upper	Right		..	2	3	4	5	..	..	..	..	..	8	..	..	Tongue coated	....	....
		Left		..	2	3	4	5	1	..	..	..	..	8	..	..			
	Lower	Right		..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left		..	..	3	4	5	1	2	..	..	..	8	..	..			
247	Upper	Right		..	2	3	4	5	1	..	..	..	..	8	..	..	(+)	....	....
		Left		1	2	3	4	5	..	..	..	..	..	8	..	..			
	Lower	Right		..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left		..	..	3	4	5	1	2	..	..	..	8	..	..			
248	Upper	Right		..	..	3	4	5	1	..	..	..	..	8	..	..	(+)	....	....
		Left		..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right		..	..	..	4	5	1	2	..	..	..	8	..	..			
		Left		..	..	..	4	5	1	2	..	..	..	8	..	..			
249	Upper	Right		..	..	3	4	5	1	2	..	..	..	8	..	..	(+) Weak looking	....	....
		Left		..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right		..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left		..	..	3	4	5	1	2	..	..	..	8	..	..			
250	Upper	Right		..	..	3	4	5	1	2	..	..	..	8	..	..	Tongue slightly coated.	....	....
		Left		..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right		..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left		..	..	3	4	5	1	2	..	..	..	8	..	..			
251	Upper	Right		..	2	3	4	5	1	..	..	..	..	8	..	..	(+)	....	....
		Left		..	2	3	4	5	1	..	..	..	..	8	..	..			
	Lower	Right		..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left		..	..	..	4	5	1	2	3	..	..	8	..	..			
252	....			..	..	..	..	..	..	..	..	..	..	..	..	..	(+)	....	....
253	Upper	Right		..	..	3	4	5	1	2	..	..	..	8	..	..	Weakly	....	....
		Left		..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right		..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left		..	..	..	4	5	1	2	..	..	..	8	..	..			

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[a] See also table on p. 295 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
254	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left	..	..	..	4	5	1	2	3	..	..	8	..	..			
255	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right	..	..	..	4	5	1	2	3	..	..	8	9	..			
		Left	..	..	..	4	5	1	2	3	..	..	8	9	..			
256	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left	..	..	..	4	5	1	2	3	..	..	8	..	..			
257	....		..	..	..	..	..	..	All except last molars.							(+)	....	....
258	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left	..	..	..	4	5	1	2	..	..	..	8	..	..			
259	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
260	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left	..	..	3	4	5	1	..	..	..	..	8	..	..			
	Lower	Right	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
261	Upper	Right	..	..	..	..	..	1	2	3	6	7	8	9	..	(+)	....	....
		Left	..	..	..	..	5	1	2	..	6	..	8	9	..			
	Lower	Right	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left	..	..	..	..	..	1	2	3	6	7	8	9	..			
262	Upper	Right	..	..	..	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left	..	..	..	..	5	1	2	..	6	..	8	..	..			
	Lower	Right	..	..	..	..	5	1	2	..	6	..	8	..	..			
		Left	..	..	..	4	5	1	2	..	..	..	8	..	..			
263	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
264	Upper	Right	..	2	3	..	5	1	..	..	6	..	8	..	..	(+)	....	....
		Left	..	..	3	4	5	1	2	..	6	..	8	..	..			
	Lower	Right	..	..	..	..	5	1	2	..	6	..	8	..	..			
		Left	..	..	..	..	5	1	2	3	6	..	8	..	..			

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[a] See also table on p. 295 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. Indian Children of Approximated Ages—Continued

Table 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
265	Upper	Right	..	..	..	..	5	1	2	3	6	..	8	..	..	Tongue whitish	....	....
		Left	..	..	..	..	5	1	2	3	6	..	8	..	..			
	Lower	Right	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left	..	..	..	4	5	1	2	3	..	..	8	..	..			
266	....		..	..	..	..	..	..	..	..	..	..	..	..	..	Not fully well	....	....
267	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	Tongue somewhat coated.	....	....
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left	..	..	..	4	5	1	2	3	..	..	8	..	..			
268	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left	..	..	..	..	5	1	2	..	6	..	8	..	..			
	Lower	Right	..	..	..	..	5	1	2	3	..	..	8	..	..			
		Left	..	..	..	..	5	1	2	3	6	..	8	..	..			
269	Upper	Right	..	..	3	..	5	1	2	3	6	..	8	..	..	Not fully well	....	....
		Left	..	..	3	..	5	1	2	..	6	..	8	..	..			
	Lower	Right	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left	..	..	..	..	5	1	2	3	6	..	8	..	..			
270	Upper	Right	..	..	3	..	5	1	2	..	6	..	8	..	..	(+)	....	....
		Left	..	..	3	..	5	1	2	..	6	..	8	..	..			
	Lower	Right	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left	..	..	..	..	5	1	2	3	6	..	8	..	..			
271	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	....	....
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
272	Upper	Right	..	..	..	..	..	1	2	3	6	7	8	..	..	(+)		
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right	..	..	..	..	..	1	2	3	6	7	8	..	..			
		Left	..	..	..	..	5	1	2	3	6	..	8	..	..			
273	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)		
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left	..	..	..	4	5	1	2	3	..	..	8	..	..			
274	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)		
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
275	Upper	Right	..	2	..	..	..	1	..	3	6	7	8	..	..	(+)	Very small.	....
		Left	..	2	..	..	..	1	..	3	6	7	8	9	..			
	Lower	Right	..	..	..	..	..	1	2	3	6	7	8	..	..			
		Left	..	..	..	..	..	1	2	3	6	7	8	..	..			
276	Upper	Right	..	..	3	4	5	1	2	..	..	..	8	..	..	Tongue slightly coated.	....	....
		Left	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower	Right	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left	..	..	..	..	5	1	2	3	6	..	8	..	..			

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[a] See also table on p. 295 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*d*) PIMA GIRLS—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
277	Upper..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..	Tongue coated........	....	....
		Left ..	..	..	3	..	5	1	2	..	6	..	8	..	..			
	Lower..	Right.	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left ..	..	..	..	4	5	1	2	3	..	..	8	..	..			
278	Upper..	Right.	..	..	3	..	..	1	2	..	6	7	8	9	..	Not fully well.........	Very small.	....
		Left ..	..	..	3	..	..	1	2	..	6	7	8	9	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	9	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
279	Upper..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)		
		Left ..	..	..	3	..	5	1	2	..	6	..	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	9	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			
280	....		..	..	..	..	..	..	..	..	..	..	..	..	..	(+)	Very small.	....
281	....		..	..	..	..	..	All except last molars.								Tongue yellowish......	....do ..	....
282	Upper..	Right.	..	..	3	..	5	1	2	..	6	..	8	..	..	(+)	....do ..	....
		Left ..	..	..	3	..	..	1	2	..	6	7	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	9	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	9	..			
283	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	..	..	(+)	....do ..	....
		Left ..	..	..	..	..	..	1	2	3	6	7	8	..	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
284	....		..	..	..	..	..	..	..	..	..	..	..	..	..	(+)		
285	Upper..	Right.	..	..	3	..	5	1	2	..	6	..	8	..	..	(+)		
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left ..	..	..	..	..	5	1	2	3	6	7	8	..	..			
286	Upper..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..	(+)		
		Left ..	..	..	..	..	5	1	2	3	6	..	8	9	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	9	..			
		Left ..	..	..	..	..	5	1	2	3	6	7	8	9	..			
287	Upper..	Right.	..	..	3	..	5	1	2	..	6	..	8	..	..	(+)	Very small.	....
		Left ..	..	..	..	..	..	1	2	..	6	7	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left ..	..	..	..	..	..	1	2	3	6	..	8	..	..			
288	....		..	..	..	..	..	..	..	..	..	..	..	..	..	(+)		
289	Upper..	Right.	..	..	3	..	5	1	2	..	6	..	8	..	..	(+)		
		Left ..	..	..	3	..	5	1	2	..	6	..	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			

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[a] See also table on p. 295 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
290	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	..	..	(+)		
		Left ..	..	..	..	..	5	1	2	3	6	..	8	9	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
291	Upper..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)		
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
292	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	(+)		
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	9	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	9	..			
293	....		..	..	..	..	..	All except last molars.								Not quite well........	Very small.	....
294	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	..	..	(+)		
		Left ..	..	..	..	..	..	1	2	3	6	7	8	..	..			
	Lower.	Right.	..	..	..	..	..	1	2	3	6	7	8	..	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	..	..			
295	....		..	..	..	..	..	All except last molars.								Weakly..............	....	....
296	Upper..	Right.	..	..	3	..	5	1	2	..	6	..	8	..	..	Tongue somewhat coated.	....	....
		Left ..	..	..	3	..	5	1	2	..	6	..	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	..	..			
297	Upper..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	Small..	Yes, for over a year.
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower..	Right.	..	..	..	4	5	1	2	3	..	..	8	..	..			
		Left ..	..	..	..	4	5	1	2	3	..	..	8	9	..			
298	Upper..	Right.	..	..	3	..	5	1	2	..	..	..	8	..	..	Not quite well........	....	....
		Left ..	..	..	3	..	5	1	2	..	..	..	8	..	..			
	Lower..	Right.	..	..	3	..	5	1	2	..	..	..	8	..	..			
		Left ..	..	..	3	..	5	1	2	..	..	..	8	..	..			
299	....		..	..	..	..	..	All except last molars.								(+)	Very small.	....
300	Upper..	Right.	..	..	..	..	..	1	2	..	6	7	8	9	..	(+)	....do..	....
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
301	Upper..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..	(+)	Small..	Yes, within a year.
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower..	Right.	..	..	3	4	5	1	2	..	..	..	8	9	..			
		Left ..	..	..	..	4	5	1	2	..	..	..	8	..	..			
302	....		..	..	..	..	..	All except last molars.								(+)	....do..	do.

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[a] See also table on p. 295 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*d*) PIMA GIRLS—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
303	....		..	..	..	..	..	All except last molars.								(+)		
304	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	(+)	Very small.	....
		Left ..	..	..	..	..	5	1	2	3	6	..	8	9	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	9	..			
		Left ..	..	..	..	..	5	1	2	3	6	..	8	9	..			
305	....		..	..	..	..	..	All except last molars.								(+)	Small..	Yes, within a year.
306	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	..	..	Not quite well........	Very small.	(?)
		Left ..	..	..	..	..	..	1	2	3	6	7	8	..	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
307	Upper..	Right.	..	..	3	4	5	1	2	..	..	..	8	9	..	(+)	....do..	....
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
	Lower..	Right.	..	..	3	4	5	1	2	..	..	..	8	..	..			
		Left ..	..	..	3	4	5	1	2	..	..	..	8	..	..			
308	....		..	..	..	..	..	..	..	..	..	..	..	..	..	(+)		
309	Upper..	Right.	..	..	3	..	5	1	2	..	6	..	8	9	..	(+)	Moderate.	Yes, within a year.
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
310	....		..	..	..	..	..	All except last molars.								(+)	Small..	....
311	....		..	..	..	..	..	....do........								(+)	....do..	Yes, more than a year.
312	....		..	..	..	..	..	....do........								(+)	....do..	....
313	....		..	..	..	..	..	....do........								(+)	....do..	do.
314	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	(?)	....do..	....
		Left ..	..	..	..	..	..	1	2	3	6	7	8	..	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
315	Upper.	Right.	..	..	..	..	..	1	2	..	6	7	8	9	..	(+)	....do..	....
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
316	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	Not quite well........	Very small.	do.
		Left ..	..	..	3	..	..	1	2	..	6	7	8	9	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left ..	..	..	..	..	..	1	2	3	6	7	8	9	..			
317	....		..	..	..	..	..	All except last molars.								Tongue coated........	Moderate.	do.
318	....		..	..	..	..	..	....do........								(+)	Very small.	....

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[a] See also table on p. 295 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*d*) PIMA GIRLS—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
319			..	..	..	..	..	All except last molars.								(+)	Very small.	
320			..	..	..	..	..	do.								(+)	Small..	Yes, within a year.
321			..	..	..	..	..									Somewhat nervous.		
322			..	..	..	..	..	All except last molars.								(+)	Very small.	Yes, more than a year.
323			..	..	..	..	..									Slightly nervous.		
324			..	..	..	..	..	All except last molars.								Tongue slightly coated.	Very small.	
325			..	..	..	..	..	do.								(+)	Small..	
326	Upper..	Right.	..	..	3	..	5	1	2	..	6	..	8	..	..	(+)	....do..	Yes, within a year.
		Left..	..	..	..	..	5	1	2	..	6	..	8	..	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	..	..			
		Left..	..	..	..	..	5	1	2	3	6	..	8	..	..			
327	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	(+)	Moderate.	Yes, more than a year.
		Left..	..	..	..	..	5	1	2	3	6	..	8	9	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left..	..	..	..	..	..	1	2	3	6	7	8	9	..			
328	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	..	..	(+)	Small..	do.
		Left..	..	..	..	..	..	1	2	3	6	7	8	..	..			
	Lower..	Right	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left..	..	..	..	..	..	1	2	3	6	7	8	..	..			
329			..	..	..	..	..	All except last molars.								(+)	Moderate.	do.
330			..	..	..	..	..	do.								(+)	Small..	do.
331			..	..	..	..	..	do.								(+)	....do..	do.
332	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	Tongue somewhat coated.	....do..	do.
		Left..	..	..	3	..	..	1	2	..	6	7	8	9	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left..	..	..	..	..	..	1	2	3	6	7	8	9	..			
333			..	..	..	..	..	All except last molars.								(+)	Moderate.	do.
334			..	..	..	..	..	do.								(+)	Small..	Yes, within a year.
335	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	(+)	Moderate.	Yes, over a year.
		Left..	..	..	..	..	..	1	2	3	6	7	8	9	..			
	Lower..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	x			
		Left..	..	..	..	..	..	1	2	3	6	7	8	9	x			
336	Upper..	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	Tongue slightly coated.	Small..	do.
		Left..	..	..	..	..	..	1	2	3	6	7	8	9	..			
	Lower..	Right.	..	..	..	..	5	1	2	3	6	..	8	9	..			
		Left..	..	..	..	..	..	1	2	3	6	7	8	9	..			

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[a] See also table on p. 295 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. Indian Children of Approximated Ages—Continued

Table 4 (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	Position.	Teeth.[b] First.	Teeth.[b] Second.	Condition of subject.[c]	Breasts.	Menstruation.
337	....	.. ..	All except last molars.	(+)	Small..	Yes, over a year.
338	....	.. ..	.....do........	(+)	Moderate.	do.
339	....	.. ..	....	(+)	....	....
340	....	.. ..	30: All except lower last molars.	(+)	Small..	do.
341	....	. .. .	All except last molars.	(+)	Moderate.	do.
342	Upper.. Right.	 5	1 2 3 6 .. 8 9 ..	(+)	Small..	do.
	Upper.. Left ..	 5	1 2 3 6 .. 8 9 ..			
	Lower.. Right.	 5	1 2 3 6 .. 8 9 ..			
	Lower.. Left ..	 5	1 2 3 6 .. 8 9 ..			
343	....	.. ..	.. ..	Not quite well........	....	....
344	....	.. ..	All except last molars	(+)	Small..	do.
345	Upper.. Right.	.. ..	1 2 3 6 7 8	Somewhat nervous...	Moderate.	do.
	Upper.. Left ..	.. ..	1 2 3 6 7 8 9 ..			
	Lower.. Right.	.. ..	1 2 3 6 7 8 9 ..			
	Lower.. Left ..	.. ..	1 2 3 6 7 8 9 ..			
346	....	.. ..	.. ..	(+)	....	....
347	....	.. ..	All except last molars.	Slightly nervous......	Moderate.	do.
348	....	.. ..	All except last molars.	(+)	....do..	do.
349	....					
350	....	.. ..	.....do........	(+)	Very small.	do.
351	....	.. ..	.....do........	(+)	Small..	do.
352	....	.. ..	.....do........	Tongue coated........	....do..	do.
353	....	.. ..	.....do........	(+)	Moderate.	do.
354	....	.. ..	.....do........	(+)	....	
355	....	.. ..	.....do........	(+)	Moderate.	do.
356	....	.. ..	.....do........	(+)	....do..	do.
357	....	.. ..	.....do........	(+)	....do..	do.
358	....	.. ..	.....do........	(+)	....do..	do.
359	....	.. ..	All 32.	Sore throat........	....do..	do.
360	....	.. ..	All except last molars.	Not well........	Small..	....
361	....	.. ..	.....do........	(+)	Moderate.	do.
362	....	.. ..	.....do........	(+)	Small..	do.

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[a] See also table on p. 295 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4 (Female). *Teeth; condition of subject; breasts; menstruation* [a]—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	Position.		Teeth.[b]													Condition of subject.[c]	Breasts.	Menstruation.
			First.					Second.										
363			..	..	..	..	..	..	..	..	..	..	..	..	..	Not well		
364			..	..	..	..	..	All except last molars.								(+)	Moderate.	Yes, over a year.
365			..	..	..	..	..	..	..	..	..	..	..	..	..	(+)		
366	Upper	Right.	..	..	..	..	..	1	2	3	6	7	8	9	x	(+)	Moderate.	do.
		Left	..	..	..	..	..	1	2	3	6	7	8	9	..			
	Lower	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left	..	..	..	..	..	1	2	3	6	7	8	9	x			
367			..	..	..	..	..	All except last molars.								(+)	Small	
368			..	..	..	..	..	do.								(+)	Moderate.	do.
369	Upper	Right.	..	..	..	..	..	1	2	3	6	..	8	9	..	Tongue slightly whitish.	do.	do.
		Left	..	..	..	..	..	1	2	3	6	..	8	9	..			
	Lower	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..			
		Left	..	..	..	..	..	1	2	3	6	7	8	9	..			
370			..	..	..	..	..	All 32.								(+)	do.	do.
371			..	..	..	..	..	All 32.								(+)	do.	do.
372			..	..	..	..	..	All except last molars.								(+)	do.	do.
373	Upper	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	Tongue somewhat coated.	do.	do.
		Left	..	..	..	..	..	1	2	3	6	7	8	9	..			
	Lower	Right.	..	..	..	..	..	1	2	3	6	7	8	9	x			
		Left	..	..	..	..	..	1	2	3	6	7	8	9	x			
374			..	..	..	..	..	..	..	..	..	..	..	..	..	(+)		
375			..	..	..	..	..	..	..	..	..	..	..	..	..	(+)		
376			..	..	..	..	..	..	..	..	..	..	..	..	..	(+)		
377			..	..	..	..	..	All except last molars.								(+)	Moderate.	do.
378	Upper	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	Tongue coated	do.	do.
		Left	..	..	..	..	..	1	2	3	6	7	8	9	..			
	Lower	Right.	..	..	..	..	..	1	2	3	6	7	8	9	x			
		Left	..	..	..	..	..	1	2	3	6	7	8	9	x			
379	Upper	Right.	..	..	..	..	..	1	2	3	6	7	8	9	..	(+)	Small	do.
		Left	..	..	..	..	..	1	2	3	6	7	8	9	..			
	Lower	Right.	..	..	..	..	..	1	2	3	6	7	8	9	x			
		Left	..	..	..	..	..	1	2	3	6	7	8	9	x			
380			..	..	..	..	..	All except last molars.								Tongue slightly coated.	do.	do.
381			..	..	..	..	..	do.								(+)	Moderate.	do.
382			..	..	..	..	..	All 32.								(+)	do.	do.
383			..	..	..	..	..	All except last molars.								(+)	do.	do.

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[a] See also table on p. 295 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 4. (Female). *Teeth; condition of subject; breasts; menstruation*[a]—Continued

(*d*) **PIMA GIRLS**—Continued

Record no.	Position.		Teeth.[b]		Condition of subject.[c]	Breasts.	Menstruation.
			First.	Second.			
384					Tongue slightly yellowish.		
385	Upper	Right		1 2 3 6 7 8 9 ..	(+)	Moderate.	Yes, over a year.
		Left		1 2 3 6 7 8 9 ..			
	Lower	Right		1 2 3 6 7 8 9 x			
		Left		1 2 3 6 7 8 9 ..			
386					(+)		
387				All except last molars.	(?)	Moderate.	do.
388				do.	Slightly nervous.	do.	do.
389				do.	(+)	do.	do.
390					(+)	do.	do.

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[a] See also table on p. 295 et seq.

[b] Explanation: 1, median incisor; 2, lateral incisor; 3, canine; 4, anterior premolar; 5, posterior premolar; 6, anterior bicuspid; 7, posterior bicuspid; 8, first molar; 9, second molar; 10 (=x), third molar.

[c] Symbol (+) means in good health and normal state; has reference chiefly to Table 3 (physiological data).

II. Indian Children of Approximated Ages—Continued

Table 5. *Abstract of measurements*

(*a*) **APACHE**

MALE

	Boys: Stature (in cm.).																Adults.	
	105.8 to 109.9.		110 to 119.9.		120 to 129.9.		130 to 139.9.		140 to 149.9.		150 to 159.9.		160 to 169.9.		170 to 175.3.		169.7.	
	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.
Height supra ischia	4	60.4	8	63.9	22	69.3	36	72.3	37	75.9	28	80.6	38	86.5	14	88.7	60	90.8
Percentage of stature	4	*56.6*	8	*55.1*	22	*54.6*	36	*53.8*	37	*52.3*	28	*52.1*	38	*52.3*	14	*51.6*	60	*53.2*
Height sub ischia	4	46.7	8	51.9	22	57.7	36	62.1	37	69.3	28	74.4	38	78.8	14	83.3	60	80.4
Percentage of stature	4	*43.4*	8	*44.9*	22	*45.4*	36	*46.2*	37	*47.7*	28	*47.9*	38	*47.7*	14	*48.4*	60	*46.9*
Weight *kg*	3	20.1	7	23.1	21	29.6	35	33.2	36	39.8	28	48.3	38	58.6	13	62.9	......	......
Weight per cm. of stature *grm*	3	*190*	7	*200*	21	*233*	35	*247*	36	*275*	28	*311*	38	*357*	13	*366*	......	......
Head undeformed:																		
Diameter antero-posterior max	2	16.3	4	17	10	17.3	14	17.5	15	17.4	23	17.8	25	18	8	18.6	148	18.7
Diameter lateral max	2	14.7	4	15.2	10	15.1	14	15.1	15	15.2	23	15.6	25	15.9	8	15.9	148	15.8
Height *a*	2	12.1	4	12.7	10	12.8	14	12.8	15	13.0	23	13.3	25	13.4	8	13.5	148	13.5
Cephalic index	2	*90.2*	4	*89.7*	10	*86.9*	14	*86.5*	15	*87.5*	23	*87.6*	25	*86.9*	8	*85.3*	148	*84.9*
Height-length index	2	*77*	4	*74.8*	10	*73.6*	14	*73.4*	15	*74.6*	23	*74.6*	25	*72.9*	8	*72.3*	148	*72.1*
Height-breadth index	2	*85.4*	4	*83.5*	10	*84.8*	14	*85.0*	15	*85.2*	23	*85.2*	25	*83.9*	8	*84.8*	148	*84.9*
Cephalic module	4	14.6	8	14.9	22	15.1	36	15.1	36	15.3	28	15.6	38	15.8	14	15.9	174	16.0
Module in relation to stature (stature=1,000)	4	*136*	8	*128*	22	*118*	36	*112*	36	*105*	28	*100*	38	*96*	14	*93*	167	*94*
Face:																		
Height	4	9.0	8	9.4	22	9.8	36	10.0	37	10.5	28	11.1	38	11.6	14	11.8	174	11.8
Diameter bizygomatic max	4	12.1	8	12.8	22	13.1	36	13.3	37	13.7	28	14.1	38	14.6	14	14.6	174	14.9
Facial index	4	*74.7*	8	*73.3*	22	*74.9*	36	*75.6*	37	*76.6*	28	*78.9*	38	*80.0*	14	*80.9*	174	*78.8*

Physiological (in normal subjects):																
Pulse	3	83	5	81	18	73	30	73	32	69	23	69	34	66	11	65	7	63
Respiration	3	21	6	21	20	20	32	19	32	18	26	19	33	18	11	18	7	16
Temperature	3	99.6	6	99.7	16	99.0	32	98.9	32	98.8	24	98.9	33	98.8	11	98.9	7	98.5
Pressure force:																		
Right hand	4	4.2	8	7.0	20	12.5	36	14.8	37	18.9	28	25.9	37	36.4	13	44.0	58	42.9
Left hand	4	3.2	8	6.0	20	11.0	36	13.8	37	16.5	28	23.7	38	33.9	13	39.3	58	40.3
Traction	......	0.5	8	1	20	3.5	36	5.6	36	9.2	28	15.1	38	22.7	13	26.6	58	27.4

(*b*) APACHE

FEMALE

	Girls: Stature (in cm.).														Adults.	
	106.6 to 109.9.		110 to 119.9.		120 to 129.9.		130 to 139.9.		140 to 149.9.		150 to 159.9.		160 to 166.		157.2.	
	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.
Height supra ischia	3	60.9	14	64.6	26	68.5	34	72.8	51	77.5	58	82.3	14	85.2	29	82.6
Percentage of stature	3	*56.4*	14	*55.8*	26	*54.2*	34	*53.8*	51	*53.3*	58	*53.5*	14	*52.4*	29	*52.8*
Height sub ischia	3	47.1	14	51.2	26	57.5	34	62.4	51	67.9	58	71.7	14	77.3	29	73.9
Percentage of stature	3	*43.6*	14	*44.2*	26	*45.8*	34	*46.2*	51	*46.7*	58	*46.5*	14	*47.6*	29	47.2
Weight ... kg	3	20.3	14	23.3	26	27.6	34	32.9	51	41.1	54	52.0	12	59.2	......	......
Weight per cm. of stature ... grm	3	*188*	14	*201*	26	*222*	34	*244*	51	*282*	54	*337*	12	*365*	......	......
Head undeformed:																
Diameter antero-posterior max	2	16.9	10	17.0	15	16.8	28	17.1	39	17.4	43	17.5	8	17.6	41	17.5
Diameter lateral max	2	14.4	10	14.7	15	14.9	28	15.0	39	15.1	43	15.3	8	15.5	41	15.5
Height[a]	2	12.5	10	12.5	15	12.6	28	12.3	38	12.8	43	12.9	8	13.3	41	13.0
Cephalic index	2	*85.3*	10	*87.1*	15	*88.4*	28	*87.7*	38	*86.5*	43	*87.5*	8	*87.8*	41	*88.7*
Height-length index	2	*74.0*	10	*74.0*	15	*75.0*	28	*74.5*	38	*73.5*	43	*73.7*	8	*75.2*	41	*74.6*

[a] Between line connecting external auditory meati and bregma.

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 5. *Abstract of measurements*—Continued

(*b*) **APACHE**—Continued

FEMALE—Continued

	Girls: Stature (in cm.).														Adults.	
	106.6 to 109.9.		110 to 119.9.		120 to 129.9.		130 to 139.9.		140 to 149.9.		150 to 159.9.		160 to 166.		157.2.	
	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.
Head undeformed—Continued.																
Height-breadth index	2	*87.0*	10	*84.9*	15	*84.9*	28	*85.0*	38	*85.0*	43	*84.2*	8	*85.6*	41	*84.1*
Cephalic module	3	14.85	14	14.6	25	14.8	34	14.6	51	15.1	58	15.2	14	15.5	41	15.35
Module in relation to stature (stature=1,000)	3	*138*	14	*126*	25	*118*	34	*111*	51	*104*	58	*98.9*	14	*95.6*	51	*97.9*
Face:																
Height	3	9.2	14	9.3	26	9.7	34	10.0	52	10.5	58	10.9	14	11.4	51	10.8
Diameter bizygomatic max	3	12.3	14	12.6	26	12.9	34	13.2	52	13.6	58	14.0	14	14.4	51	14.1
Facial index	3	*74.6*	14	*73.7*	26	*74.8*	34	*75.7*	52	*77.4*	58	*77.8*	14	*79.4*	51	*76.4*
Physiological (in normal subjects):																
Pulse	2	86	11	86	21	79	22	76	42	74	48	72	12	72	7	65.5
Respiration	2	22	12	23	22	21	28	20	41	19	51	19	13	18	7	17
Temperature	2	99.3	12	99.9	21	99.3	27	99.1	40	98.7	51	98.7	13	98.6	7	98.8
Pressure force:																
Right hand	2	3.5	14	9.3	26	11.1	34	13.8	51	19.6	55	24.8	13	27.9	26	26.2
Left hand	2	3.0	14	7.9	26	9.5	34	11.9	51	17.5	55	21.9	13	25.0	26	25.1
Traction	2	0.5	11	1.4	26	2.1	34	3.9	51	9.4	55	14.6	13	18.7	26	18.4

(c) PIMA

MALE

	Boys: Stature (in cm.).																Adults.	
	100 to 109.9.		110 to 119.9.		120 to 129.9.		130 to 139.9.		140 to 149.9.		150 to 159.9.		160 to 169.9.		170 to 172.		171.8.	
	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.
Height supra ischia	3	57.3	4	62.9	14	68.1	27	71.5	28	75.8	19	81.1	27	86.4	2	90.9	53	91.1
Percentage of stature	3	*55.5*	4	*55.6*	14	*53.7*	27	*52.8*	28	*52.3*	19	*52.4*	27	*52.3*	2	*52.9*	53	*52.9*
Height sub ischia	3	45.9	4	50.4	14	58.7	27	64.1	28	69.1	19	74.1	27	78.9	2	80.8	53	81.0
Percentage of stature	3	*44.5*	4	*44.4*	14	*46.3*	27	*47.2*	28	*47.7*	19	*47.6*	27	*47.7*	2	*47.1*	53	*47.1*
Weight *kg.*	3	17.2	4	20.5	14	27.9	26	32.7	28	39.5	19	49.0	27	57.5	2	65.5	......	......
Weight per cm. of stature *grm.*	3	*167*	4	*181*	14	*219*	26	*241*	28	*269*	19	*314*	27	*361*	2	*382*	......	......
Head undeformed:																		
Diameter antero-posterior max	3	17.1	4	17.7	13	17.7	24	18.1	25	18.3	18	18.4	24	18.6	2	18.6	51	19.2
Diameter lateral max	3	13.6	4	14.0	13	14.0	24	13.8	25	13.9	18	14.2	24	14.4	2	15.0	51	14.7
Height [a]	3	12.3	4	12.8	14	12.8	24	13.1	27	13.2	18	13.3	26	13.5	2	13.7	51	13.8
Cephalic index	3	*79.2*	4	*79.5*	13	*79.5*	23	*76.2*	25	*76.4*	18	*77.2*	24	*77.3*	2	*(80.9)*	51	*76.4*
Height-length index	3	*71.6*	4	*72.9*	13	*72.7*	23	*72.5*	25	*71.9*	18	*72.0*	24	*72.5*	2	*73.7*	51	*71.9*
Height-breadth index	3	*90.4*	4	*91.8*	13	*91.4*	23	*95.2*	25	*94.2*	18	*93.4*	24	*93.9*	2	*91.3*	51	*94.1*
Cephalic module	3	14.3	4	14.8	14	14.8	27	15.0	28	15.1	19	15.3	27	15.5	2	15.7	53	15.9
Module in relation to stature (stature=1,000)	3	*139*	4	*131*	14	*117*	27	*110*	28	*104*	19	*97.9*	27	*93.7*	2	*91.7*	53	*92.3*
Face:																		
Height	3	8.9	4	9.4	14	10.0	27	10.4	28	10.7	19	11.3	26	11.9	2	12.2	53	12.3
Diameter bizygomatic max	3	11.5	4	12.0	14	12.3	27	12.8	28	13.0	19	13.5	26	13.9	2	14.2	53	14.5
Facial index	3	*77.4*	4	*78.3*	14	*80.2*	27	*81.9*	28	*81.6*	19	*83.7*	26	*85.3*	2	*86.0*	53	*84.6*

[a] Between line connecting external auditory meati and bregma.

II. INDIAN CHILDREN OF APPROXIMATED AGES—Continued

TABLE 5. *Abstract of measurements*—Continued

(*c*) **PIMA**—Continued

MALE—Continued

	Boys: Stature (in cm.).																Adults.	
	100 to 109.9.		110 to 119.9.		120 to 129.9.		130 to 139.9.		140 to 149.9.		150 to 159.9.		160 to 169.9.		170 to 172.		171.8.	
	Number of subject.	Average.	Number of subject.	Average.	Number of subject.	Average.	Number of subject.	Average.	Number of subject.	Average.	Number of subject.	Average.	Number of subject.	Average.	Number of subject.	Average.	Number of subject.	Average.
Physiological (in normal subjects):																		
Pulse	6	82	8	81.5	13	77	22	73	25	69	3	65	24	66	......	......	24	59
Respiration	6	26	9	25	14	22	26	21	26	20	16	20	24	19	2	18.5	23	18
Temperature	3	99.8	4	99.9	12	99.7	25	99.5	26	99.5	13	99.3	24	99.3	2	99.3	24	98.5
Pressure force:																		
Right hand	2	3.0	4	4.4	14	13.4	27	15.9	27	19.4	19	28.6	26	38.5	2	46.3	14	41.2
Left hand	2	2.5	4	3.8	14	12.3	27	14.6	27	17.0	19	24.2	26	34.2	2	39.0	14	35.8
Traction	1	0.5	4	1.0	14	3.1	27	5.4	27	8.4	19	14.2	26	22.6	2	24.75	14	24.2

(*d*) **PIMA**

FEMALE

	Girls: Stature (in cm.).														Adults.	
	100 to 109.9.		110 to 119.9.		120 to 129.9.		130 to 139.9.		140 to 149.9.		150 to 159.9.		160 to 164.3.		157.4.	
	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.	Number of subjects.	Average.
Height supra ischia	1	59.6	3	62.6	18	67.6	32	71.7	35	76.9	35	82.0	5	85.3	30	82.4
Percentage of stature	1	*55.3*	3	*54.5*	18	*54.0*	32	*52.9*	35	*52.8*	35	*53.3*	5	*52.6*	30	*52.3*

Height sub ischia	1	48.3	3	52.2	18	57.6	32	63.7	35	68.7	35	71.7	5	76.9	30	75.0
Percentage of stature	1	*44.7*	3	*45.5*	18	*46.0*	32	*47.1*	35	*47.2*	35	*46.7*	5	*47.4*	30	*47.7*
Weight ... *kg.*	1	18.1	3	20.0	18	26.5	32	32.8	35	42.9	34	53.4	4	62.0	......	......
Weight per cm. of stature ... *grm.*	1	*168*	3	*173*	18	*211*	32	*242*	35	*295*	34	*347*	4	*382*	......	......
Head undeformed:																
Diameter antero-posterior max	1	16.6	5	17.2	16	17.4	36	17.6	38	17.8	43	17.9	7	18.4	30	18.3
Diameter lateral max	1	13.3	5	13.5	16	13.4	36	13.7	38	13.9	43	14.2	7	14.4	30	14.4
Height[a]	1	12.0	3	12.4	15	12.5	32	12.6	34	12.9	34	13.1	5	13.4	30	13.4
Cephalic index	1	*80.1*	3	*78.6*	15	*76.9*	32	*77.5*	34	*76.4*	34	*79.2*	5	*78.0*	30	*78.8*
Height-length index	1	*72.3*	3	*73.1*	15	*71.7*	32	*71.3*	34	*72.6*	34	*73.2*	5	*73.1*	30	*73.1*
Height-breadth index	1	*90.2*	3	*93.3*	15	*93.4*	32	*92.1*	34	*92.9*	34	*92.4*	5	*93.9*	30	*92.8*
Cephalic module	1	14.0	3	14.9	18	15.1	32	14.6	35	14.8	34	15.1	5	15.4	30	15.35
Module in relation to stature (stature=1,000)	1	*129*	3	*130*	18	*120*	32	*108*	35	*102*	34	*98.1*	5	*94.9*	30	*98.1*
Face:																
Height	1	9.2	3	9.1	18	9.9	32	10.2	35	10.8	35	11.2	5	11.5	30	11.5
Diameter bizygomatic max	1	11.5	3	11.7	18	12.2	32	12.5	35	13.0	35	13.5	5	13.8	30	13.8
Facial index	1	*80.0*	3	*77.8*	18	*81.0*	32	*82.3*	35	*83.2*	35	*83.1*	5	*83.5*	30	*83.7*
Physiological (in normal subjects):																
Pulse	1	96	7	85	18	78	28	75	32	72	36	72	5	66	4	67.5
Respiration	1	28	8	26	19	22	32	21	35	21	39	20	5	19	4	18
Temperature	......	......	5	99.9	18	99.8	28	99.7	35	99.5	39	99.5	6	99.3	4	99.2
Pressure force:																
Right hand	......	......	2	3.75	17	9.8	30	13.4	33	17.2	34	22.7	5	29.3	9	22.2
Left hand	......	......	2	4.0	17	8.9	30	11.7	33	14.9	34	19.9	5	25.8	9	19.8
Traction	......	......	2	1.5	17	1.4	30	2.4	33	5.8	34	11.5	5	16.3	9	10.8

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[a] Between line connecting external auditory meati and bregma.

III. INDIAN ADULTS

TABLE 6. *Data on temperature, pulse, and respiration*

(*a*) **WHITE RIVER APACHE**

MALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.[a]	Respiration.[a]	Remarks.
1	9 a. m.	98.7	59	15	
4	10 a. m.	98.8	64	14	
7	11.30 a. m.	(99.3)?	59	18	Slight indisposition.
8	1.30 p. m.	99.2	64	16	After lunch.
9	1.45 p. m.	99.1	72	16	do.
11	2.15 p. m.	(99.4)?	61	15	A slight stomach disturbance.
15	4 p. m.	99.0	60	16	
18	10 a. m.	98.5	72	17	
20	11 a. m.	98.6	59	16	
21	11.15 a. m.	98.4	58	17	
23	1 p. m.	98.8	59	18	
32	9 a. m.	98.5	71	16	Tongue quite white.
33	9.30 a. m.	99.0	56	18	
38	10.30 a. m.	98.7	63	18	
42	9.30 a. m.	98.5	62	16	
43	9.45 a. m.	98.8	68	16	
44	10.30 a. m.	98.6	56	16	
48	5.15 p. m.	98.6	62	16	
50	7.30 a. m.	98.6	54	17	
50a	1.30 p. m.	98.7	64	16	

FEMALE

[*In good health*]

51	9 a. m.	98.9	72	18	
53	10 a. m.	98.7	66	18	
54	10.30 a. m.	98.8	60	18	
66	10 a. m.	98.8	70	15	
67	12 m	98.6	62	17	
72	9 a. m.	98.9	68	17	Some pains in lumbar region.
74	4 p. m.	98.8	60	16	

[a] Taken in sitting position.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*a*) **WHITE RIVER APACHE**—Continued

MALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua.)	Pulse.	Respiration.	Remarks.
2	9.30 a. m.	98.3	76	16	Stomach somewhat disordered.
6	11 a. m.	99.0	72	16	do.
10	2.50 p. m.	(99.2)	60	16	A slight sore throat.
12	2.30 p. m.	(99.3)	61	20	Some stomach disturbance.
13	2.45 p. m.	(99.6)	72	15	Not fully well.
14	3 p. m.	(99.3)	72	16	Not fully well (stomach).
22	1 p. m.	98.8	59	18	Stomach disordered.
25	1.45 p. m.	99.4	66	20	do.
26	2 p. m.	99.3	67	16	Not fully well (stomach).
27	2.15 p. m.	....	....	....	do.
28	2.45 p. m.	99.2	68	20	do.
29	3.15 p. m.	99.5	66	19	do.
31	5.30 p. m.	....	....	....	Not fully well.
34	9.45 a. m.	99.1	68	16	Stomach somewhat disordered.
35	10 a. m.	98.7	74	19	do.
36	10.15 a. m.	99.4	70	16	Not fully well.
40	4.15 p. m.	99.8	61	16	Not fully well (stomach).
41	9 a. m.	100.2	70	16	Not well (stomach).
49	7 a. m.	99.8	73	16	Headache.

FEMALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua.)	Pulse.	Respiration.	Remarks.
52	9.30 a. m.	98.9	82	17	Stomach disordered.
55	11.30 a. m.	99.1	70	17	do.
63	2 p. m.	99.7	69	17	Head and stomach not well.
69	4 p. m.	99.4	80	16	Excited (nervous).
70	4.15 p. m.	98.9	74	19	Stomach disordered.
73	9.30 a. m.	97.6	72	15	Stomach not well, drank tesvino.
79	11 a. m.	99.0	76	17	Somewhat nervous.

III. Indian Adults—Continued

Table 6. *Data on temperature, pulse, and respiration*—Continued

(*b*) **NAVAHO**

MALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
1	6 p. m.	98.7	80	21	After exercise.
2	10 a. m.	97.7	66	18	
3	10 a. m.	98.4	62	18	
4	11 a. m.	98.6	68	20	
5	do.	98.5	76	(23)	
6	12 m	98.6	68	18	
7	2 p. m.	98.8	70	21	
9	3 p. m.	98.9	65	16	
10	do.	98.6	66	18	
11	4 p. m.	98.8	64	20	
13	9.30 a. m.	98.8	68	20	
14	10 a. m.	98.0	58	14	
15	4 p. m.	99.0	70	18	
18	9 a. m.	99.0	67	15	
19	do.	98.9	78	15	
21	10 a. m.	98.9	56	21	
23	2 p. m.	99.4	71	17	
26	9 a. m.	98.6	70	16	
30	11.30 a. m.	97.6	62	17	
32	5 p. m.	98.4	70	18	
35	3 p. m.	98.9	66	16	
36	5 p. m.	98.7	70	16	
38	2 p. m.	97.7	64	14	
39	do.	98.8	65	14	
41	9 a. m.	98.5	67	17	
42	5 p. m.	99.2	62	18	
43	9 a. m.	98.8	74	18	
46	7 a. m.	98.3	52	16	
47	9.30 a. m.	99.0	75	16	
49	10 a. m.	98.8	72	18	
50a	do.	98.5	76	17	
50b	11 a. m.	98.8	70	17	

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*b*) **NAVAHO**—Continued

FEMALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua.)	Pulse.	Respiration.	Remarks.
51	10 a. m.	97.3	62	20	
52	11 a. m.	99.2	70	20	
53	3 p. m.	99.0	(82)	20	
57	11 a. m.	99.4	76	20	
59	5 p. m.	99.2	72	23	
61	4 p. m.	99.2	74	22	
62	4.30 p. m.	98.5	75	20	
63	9.30 a. m.	98.7	78	16	
64	do.	99.0	76	16	
65	5 p. m.	99.1	72	22	
71	11 a. m.	98.7	72	18	
72	11.30 a. m.	99.0	75	20	
73	do.	99.2	70	18	

MALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua.)	Pulse.	Respiration.	Remarks.
8					Health not good.
12	9 a. m.	(99.1)	(80)	(16)	Not fully well.
16	6 p. m.	(99.3)	(78)	(20)	Stomach disordered.
17	do.	(99.4)	(74)	(18)	Pains in back and stomach.
22	10 a. m.	(99.0)	(80)	(20)	Not fully well.
24	6 p. m.	(99.5)	(68)	(18)	Stomach disordered.
25	2 p. m.	(100.1)	(70)	(18)	do.
29	11 a. m.	(99.1)	(77)	(16)	Not fully well.
34	2 p. m.	(99.6)	(67)	(26)	Stomach disordered.
40	5 p. m.	(100.2)	(72)	(19)	Not fully well.
48	10 a. m.	(99.4)	(72)	(21)	Stomach disordered.

FEMALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua.)	Pulse.	Respiration.	Remarks.
54	3 p. m.	(99.5)	(92)	(18)	
55	2 p. m.	99.1	82	21	Health good (pregnant).
56	4 p. m.	(99.4)	(82)	(24)	Menses.
58	2 p. m.	(100.3)	(86)	(16)	
60	5 p. m.	(99.6)	(76)	(19)	Stomach disordered.
67	3 p. m.	(99.5)	(79)	(19)	
68	2 p. m.	(99.8)	(88)	(22)	

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*c*) **PUEBLOS**

MALE

[*In good health*]

Record no.	Time of the day	Temperature (sub lingua.)	Pulse.	Respiration.	Remarks.
2	8 a. m	99.0	56	15	
11	3.15 p. m	97.9	57	17	
12	8.30 a. m	98.7	56	17	
13	8.45 a. m	98.7	56	18	
14	9 a. m	98.8	59	15	
15	10 a. m	98.4	57	18	
18	4.30 p. m	98.6	50	16	
19	8 a. m	98.5	60	16	
27	10.25 a. m	99.1	59	17	
36	6.30 a. m	97.1	51	12	Had breakfasted; cause?
37	10 a. m	98.9	62	16	
38	10.30 a. m	98.7	68	16	
43	2 p. m	98.9	57	16	
46	7 a. m	98.5	58	16	
47	7.30 a. m	99.1	60	16	
50	2 p. m	98.7	66	16	

FEMALE

[*In good health*]

Record no.	Time of the day	Temperature (sub lingua.)	Pulse.	Respiration.	Remarks.
69	7 a. m	98.8	56	16	
87	8.30 a. m	98.6	58	15	
89	10 a. m	98.8	57	17	

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*c*) **PUEBLOS**—Continued

MALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
1	4.30 p. m	99.7	60	16	Headache.
3	11 a. m	99.6	64	20	Stomach somewhat disordered.
4	11.30 a. m	99.2	46	20	do.
5	11.45 a. m	99.2	54	16	A slight lumbago.
6	12 m	99.4	60	17	Headache.
7	12.15 p. m	99.6	54	14	Stomach and eyes out of order.
8	1 p. m	99.2	54	17	Slight disorder of stomach.
9	2.15 p. m	99.9	60	16	Not fully well.
10	3 p. m	99.4	44	16	Left eye sore; tongue slightly coated.
16	1 p. m	99.0	60	19	Stomach somewhat disordered.
17	2.45 p. m	99.5	62	17	Tongue coated.
20	9 a. m	99.6	70	15	Stomach disturbed.
21	10.30 a. m	99.2	66	14	Not fully well.
22	11.40 a. m	99.2	59	20	Stomach somewhat disordered.
23	12 m	100.0	58	22	Not well.
24	2.30 p. m	100.1	70	18	do.
25	3.30 p. m	99.6	74	18	Stomach disordered.
26	9.40 a. m	99.7	54	15	Tongue coated.
28	10.40 a. m	99.3	58	18	Stomach deranged.
29	1 p. m	99.8	65	18	do.
30	1.15 p. m	99.7	68	20	do.
31	1.30 p. m	99.5	68	14	Not fully well.
32	2.30 p. m	99.3	62	16	Not fully well (lumbago).
33	3 p. m	99.0	52	15	Tongue coated.
34	3.15 p. m	98.9	54	17	Tongue slightly coated.
35	3.55 p. m	(99.6)	(76)	(26)	Not fully well.
39	2 p. m	99.5	59	16	Tongue coated.
40	5 p. m	99.2	65	16	do.
41	9.30 a. m	99.0	63	14	Tongue slightly coated.
42	1 p. m	100.2	66	24	Not well.
44	2.15 p. m	99.2	52	16	Tongue slightly coated.
45	6.15 p. m	99.4	76	19	Not fully well.
48	12 m	99.7	66	14	Tongue coated.
49	12.15 p. m	99.4	62	18	Tongue somewhat coated.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*c*) **PUEBLOS**—Continued

FEMALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
51	9.15 a. m	(99.2)	(76)	(22)	Not fully well.
52	8.45 a. m	99.4	64	17	Tongue coated.
53	9 a. m	99.6	66	20	Stomach somewhat disordered.
54	2 p. m	99.6	68	24	Bowels not in order.
55	8 a. m	(99.0)	(84)	(16)	Pains in left shoulder.
56	8.15 a. m	99.8	59	22	Stomach disordered.
57	10.30 a. m	99.9	68	20	Not fully well.
58	1 p. m	99.2	68	19	do.
59	2 p. m	99.1	56	18	Tongue slightly coated.
60	2.30 p. m	99.5	60	16	Tongue somewhat coated.
61	4 p. m	99.5	64	22	do.
62	11 a. m	99.0	80	17	Not fully well.
63	2 p. m	99.6	56	19	do.
64	3 p. m	99.5	76	19	Not well.
65	3.15 p. m	99.8	72	16	Tongue coated; pregnant.
66	3.30 p. m	100.2	64	22	Not well.
68	5 p. m	100.2	71	18	do.
70	7.30 a. m	99.2	54	18	Probably uterine disorder.
71	7.45 a. m	99.2	56	17	Tongue slightly coated.
72	8.30 a. m	99.9	63	19	Stomach disordered.
73	10 a. m	99.4	84	22	do.
74	11 a. m	99.1	68	23	Probably uterine disorder.
75	3.30 p. m	100.4	72	20	Not well.
77	4 p. m	99.2	78	20	Not fully well.
78	5 p. m	99.8	84	22	do.
79	7.30 a. m	100.0	66	21	do.
81	3 p. m	99.5	68	15	Stomach disordered.
82	4 p. m	99.0	58	16	Tongue slightly coated.
83	6 p. m	99.6	68	15	Not fully well.
84	6.15 p. m	99.8	67	22	do.
86	8 a. m	99.1	62	20	Tongue slightly coated.
88	9 a. m	99.2	56	15	Tongue yellowish.
90	10.15 a. m	99.1	68	17	Tongue slightly coated.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*d*) **HOPI**

MALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
2	9 a. m	97.6	56	20	
3	11.30 a. m	98.9	70	(22)	
5	1 p. m	98.8	61	18	
6	2 p. m	98.0	57	18	
9	3 p. m	99.4	64	18	Eyes sore.
10	....do	98.6	73	16	
13	4 p. m	98.7	55	17	
15	8 a. m	96.9	52	16	No breakfast.
16	8.30 a. m	99.3	54	17	Had breakfasted.
17	9 a. m	99.2	68	18	do.
18	9.15 a. m	99.0	74	(24)	
23	2.30 p. m	98.2	58	20	
26	3.30 p. m	98.4	56	18	
28	4.15 p. m	99.6	53	17	Tibia sore.
29	10 a. m	98.8	64	16	
30	4.30 p. m	98.5	48	16	
31	4.45 p. m	98.6	68	18	
34	4.55 p. m	98.1	48	20	
35	5.20 p. m	98.2	50	18	
36	8 a. m	98.8	70	16	
39	9 a. m	98.4	68	18	
41	9.30 a. m	98.6	67	17	
42	10 a. m	98.8	62	15	
44	10.15 a. m	98.8	63	16	
45	10.30 a. m	97.8	51	16	
46	11 a. m	98.6	60	20	
47	11.15 a. m	97.6	58	20	
48	11.30 a. m	98.3	55	19	
50	12 m	98.2	56	16	
51	1 p. m	98.9	58	18	
56	2 p. m	98.5	58	17	
58	3 p. m	98.7	53	16	
59	3.15 p. m	98.8	58	19	
60	3.30 p. m	99.4	68	14	

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*d*) **HOPI**—Continued.

FEMALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
66	10.30 a. m.	99.3	60	22	
67	11 a. m.	99.6	64	(24)	
68	11.30 a. m.	99.8	62	19	
69	11.45 a. m.	99.3	65	21	
70	12 m.	99.3	64	20	
72	8.30 a. m.	99.4	69	(24)	
77	11 a. m.	99.4	74	20	
79	12 m.	99.5	68	21	
82	1 p. m.	99.5	76	[a] 13	
83	1.15 p. m.	99.8	72	22	
84	1.30 p. m.	99.4	76	21	
85	1.45 p. m.	98.8	60	22	
86	2 p. m.	99.8	56	17	Slight indigestion.
87	2.15 p. m.	98.6	60	16	
89	2.45 p. m.	99.4	69	22	
90	2.55 p. m.	98.9	78	15	

MALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
1	10.30 a. m.	100.2	80	22	Not fully well.
7	2 p. m.	99.4	76	23	Some headache.
11	3.30 p. m.	99.3	60	20	Disordered digestion.
19	1 p. m.	99.2	68	23	Headache.
21	1.30 p. m.	(99.5)	54	17	do.
22	1.45 p. m.	(99.8)	62	22	Stomach not in order.
24	3 p. m.	(100.0)	(76)	(17)	Stomach disordered.
25	3.15 p. m.	(99.8)	(74)	(16)	do.
27	4 p. m.	(99.0)	(72)	(23)	Not fully well.
37	8.30 a. m.	99.3	60	20	Stomach not in order.
49	11.45 a. m.	98.8	64	18	Stomach slightly disordered.
52	1.15 p. m.	(99.5)	(70)	(18)	Headache.
55	1.30 p. m.	98.9	64	16	Slight headache.

FEMALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
61	11.09 a. m.	99.9	76	18	Some cough.
63	9.30 a.m.	99.6	78	19	Cough.
64	9.45 a. m.	99.3	84	24	Some cough.
65	10 a. m.	99.8	84	22	Not fully well.
71	1 p. m.	99.1	84	20	Headache; stomach not in order.
73	10 a. m.	99.4	74	20	Slight rheumatism.
74	10.30 a. m.	(99.8)	(78)	(22)	Not fully well.

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[a] Same with thermometer out.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*e*) ZUÑI

MALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
2	9.15 a. m.	98.9	56	19	
3	10.30 a. m.	(?)	62	16	
4	11 a. m.	98.3	50	18	
5	11.15 a. m.	97.9	56	16	
6	11.45 a. m.	98.8	68	(22)	
7	12 m.	98.9	50	16	
8	12.15 p. m.	99.3	58	14	
9	1.15 p. m.	98.9	59	19	
12	2.30 p. m.	98.7	56	18	
13	2.45 p. m.	98.7	54	14	
14	3.30 p. m.	98.6	68	16	
15	5 p. m.	98.6	64	19	
16	5.15 p. m.	98.6	64	18	
24	9.30 a. m.	98.7	66	16	
26	10 a. m.	98.2	60	18	
31	11.45 a. m.	98.4	52	18	
37	9 a. m.	98.6	62	16	
38	9.15 a. m.	98.4	57	16	
39	9.30 a. m.	98.0	44	18	
43	10.15 a. m.	98.8	58	19	
46	2.45 p. m.	99.1	58	17	
50	9 a. m.	98.3	55	17	
51	9.15 a. m.	97.4	45	18	No breakfast.
52	9.45 a. m.	98.4	49	19	
53	10.10 a. m.	98.7	58	16	
54	10.30 a. m.	98.2	55	16	

FEMALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
61	2.30 p. m.	99.2	62	16	
69	12.30 p. m.	99.1	68	15	Fairly normal.
72	4 p. m.	99.0	58	17	

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*e*) **ZUÑI**—Continued

MALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
1	9 a. m.	99.5	71	20	Stomach disordered.
10	1.50 p. m.	99.4	66	17	After dinner and coffee.
11	2.10 p. m.	99.0	67	19	Stomach disordered.
17	5.30 p. m.	99.7	65	18	do.
18	5.45 p. m.	99.5	62	20	Headache.
19	6 p. m.	99.2	64	19	Tongue somewhat coated.
20	6.15 p. m.	98.1	50	14	After a rapid walk.
21	8.45 a. m.	98.3	52	18	Before breakfast.
22	9 a. m.	98.6	42	17	do.
23	9.15 a. m.	98.2	50	16	do.
25	9.45 a. m.	99.0	52	17	Not fully well.
27	10.30 a. m.	99.6	70	18	do.
28	11 a. m.	99.4	66	22	do.
29	11.15 a. m.	99.2	54	20	do.
32	12 m.	99.4	68	24	do.
33	12.15 p. m.	99.4	57	23	do.
35	1 p. m.	99.8	64	19	do.
36	8.45 a. m.	99.7	52	16	Before breakfast.
40	9.45 a. m.	98.7	66	20	Digestion slightly disordered.
42	10 a. m.	99.2	50	22	Not fully well.
44	12.45 p. m.	99.4	63	20	Stomach somewhat disordered.
45	2.30 p. m.	98.6	70	18	Stomach slightly disordered.
47	3 p. m.	100.0	72	16	
55	11:40 a. m.	99.3	66	19	Not fully well.
56		99.5	72	17	do.
57	11.45 a. m.	99.8	53	18	Headache.
58	12.10 p. m.	99.5	64	15	Not fully well.
59	3 p. m.	99.7	62	21	do.
60	4 p. m.	99.2	60	22	do.

FEMALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
62	3.30 p. m.	99.5	67	18	Tertiary syphilis.
64	8 a. m.	99.1	60	14	Stomach slightly disordered; some female trouble
65	8.30 a. m.	99.3	62	17	(?)
68	12.15 p. m.	99.8	66	21	Not fully well.
74	5 p. m.	99.9	72	20	Not well.
75	5.15 p. m.	99.5	64	22	Not fully well.
76	5.30 p. m.	99.6	56	19	do.
79	10.45 a. m.	99.3	76	20	Stomach somewhat disordered
83	11 a. m.	99.8	72	19	Not fully well.
85	1 p. m.	98.8	76	16	(?)
86	1.15 p. m.	100.2	66	22	Not well.
87	1.30 p. m.	99.9	67	16	do.
89	2 p. m.	99.8	64	18	Stomach disordered.
90	2.30 p. m.	99.4	75	22	Not fully well.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*f*) PAPAGO

MALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
2	2.30 p. m	98.7	52	20	
4	8 a. m	98.5	72	19	
5	8.15 a. m	97.9	60	18	
6	9 a. m	98.1	66	17	
8	10.45 a. m	99.1	66	16	
10	1.15 p. m	98.8	54	18	
12	4.30 p. m	(100.05)	66	17	Smoked considerably.
15	8.45 a. m	98.4	66	21	
19	12.30 p. m	98.9	63	18	
20	1 p. m	99.2	60	(22)	
30	9.30 a. m	99.2	64	16	
31	9.45 a. m	98.0	54	18	
33	10.15 a. m	98.8	56	18	
36	11.30 a. m	98.6	63	18	
37	12.30 a. m	99.5	60	18	Tongue white-coated.
40	2 p. m	99.8	66	20	Not long after dinner.
42	7.30 a. m	(?)	66	21	
43	8.30 a. m	99.3	60	20	
44	8.45 a. m	98.1	56	18	No breakfast.
45	9 a. m	[a] 97.8	60	17	
47	1.45 p. m	99.5	54	16	Not yet dined.
49	2.15 p. m	99.3	66	18	
50	2.30 p. m	99.7	60	17	After lunch.

FEMALE

[*In good health*]

52	5.10 p. m	98.7	68	20	
57	10.15 a. m	99.5	75	20	
62	4.15 p. m	98.2	62	14	Had no lunch or but little.
63	10 a. m	98.7	78	18	Was ill recently.
64	10.15 a. m	99.6	76	17	
71	10. 15 a. m	98.9	54	20	
74	11.30 a. m	99.9	68	(22)	
77	12 m	99.9	76	20	(?)
80	12.30 p. m	99.5	64	18	

[a] 7 minutes.

III. Indian Adults—Continued

Table 6. *Data on temperature, pulse, and respiration*—Continued

(*f*) **PAPAGO**—Continued

MALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
1	2 p. m	99.2	78	16	Slight stomach disorder.
3	4 p. m	99.9	66	20	Not fully well.
7	10 a. m	99.3	78	23	do.
9	12.10 p. m	99.4	54	19	Somewhat disordered stomach.
11	1.30 p. m	99.4	78	21	Probably not fully well.
13		(?)	(?)	(?)	Not fully well.
14	8.30 a. m	99.2	69	20	Tongue somewhat yellowish.
16	9 a. m	99.2	84	16	Stomach disordered.
17	10.50 a. m	99.4	63	18	Tongue coated.
18	12 m	98.8	72	16	Some slight indisposition.
21	1.50 p. m	100.2	78	22	After rapid horseback ride; stomach somewhat disordered.
22	2.15 p. m	100.1	72	24	Stomach disturbed.
23	3.45 p. m	(?)	(?)	(?)	Not fully well; heart somewhat enlarged; excited.
24	4 p. m	99.3	60	24	Backache.
26	4.30 p. m	99.2	62	18	Slight cough.
28	9 a. m	99.6	84	26	Not fully normal.
32	10 a. m	99.5	52	22	Some cough.
34	11 a. m	98.7	72	22	Headache.
35	11.15 a. m	99.6	54	17	Coughing.
46	1.30 p. m	99.3	70	15	Tongue slightly yellowish.
48	2 p. m	99.3	66	20	Tongue somewhat coated.

FEMALE

[*Not in perfectly normal condition*]

51	5 p. m	99.5	84	20	Pregnant.
53	5.30 p. m	99.4	84	17	Some stomach ache and side ache.
54	9.15 p. m	98.3	75	17	Slight stomach disturbance.
56	10 a. m	100.1	75	24	Not fully well.
58	10.30 a. m	100.05	80	22	Probably excited.
59	12 m	100.2	75	21	Stomach disordered.
60		(?)	(?)	(?)	Pregnant.
61	1.30 p. m	98.6	84	16	Not fully well.
67	3 p. m	99.7	75	26	Not well.
69	5 p. m	99.8	84	24	Not fully well.
70	10 a. m	99.4	76	21	Tongue clean; stomach somewhat disordered.
72	11 a. m	99.2	84	18	Some pains in chest.
73	11.15 a. m	99.6	81	22	Probably not fully well.
75	11.45 a. m	99.5	78	18	Slightly nervous.
76	11.40 a. m	98.9	78	20	Pregnant.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*g*) **PIMA**

MALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
1	8.30 a. m	99.4	66	19	
2	8.45 a. m	[a]97.4	66	16	
5	1 p. m	99.2	48	20	
6	1.15 p. m	99.1	66	18	
9	3.30 p. m	98.9	63	21	
10	3.45 p. m	97.3	66	17	
11	4 p. m	98.8	64	(22)	
12	4.30 p. m	[a]97.5	66	17	
13	9.15 a. m	98.3	60	16	
16	10 a. m	98.3	70	16	
18	1.30 p. m	[b]98.0	63	20	
25	5 p. m	98.3	66	18	
27	9.30 a. m	[c]98.0	60	20	
28	9.45 a. m	98.8	78	19	
29	10.15 a. m	98.3	69	18	
30	12 m	98.9	66	16	
32	1.30 p. m	98.4	68	16	
38	4.30 p. m	98.7	67	21	
39	4.45 p. m	98.7	58	18	
40	5 p. m	98.1	56	16	
45	11.45 a. m	99.3	60	18	
49	2.15 p. m	98.8	63	20	
50	9 a. m	98.9	60	18	
82	1 p. m	[c]97.5	54	18	Before lunch.

FEMALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
60	10.45 a. m	98.9	72	19	
69	4.15 p. m	99.5	70	16	
71	8.45 a. m	99.3	68	18	
77	9.30 a. m	99.1	60	17	

[a] 8 minutes. [b] 6 minutes. [c] 7 minutes.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*g*) **PIMA**—Continued

MALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
4	12 m	99.6	75	18	Tongue somewhat coated.
7	1.30 p. m	99.9	48	22	Not fully well.
8	1.45 p. m	99.6	68	17	Tongue quite coated at base.
14	9.30 a. m	99.1	66	18	Stomach slightly disordered.
15	9.45 a. m	98.9	70	19	Tongue somewhat yellowish at base.
17	1 p. m	99.9	68	27	Not fully well.
19	1.45 p. m	99.5	80	20	Not fully normal.
20	2.15 p. m	99.4	52	22	Some pains over the liver.
21	3 p. m	99.5	68	20	Says he is well; tongue clean.
22	3.15 p. m	100.2	68	20	Stomach somewhat disordered.
23	4 p. m	100.0	72	17	Tongue slightly coated.
24	4.45 p. m	100.4	66	20	Sore throat.
26	8.45 a. m	98.5	80 72	14	Some lameness of right lower limb.
31	1 p. m	100.7	74	18	Possibly malaria.
33	1.45 p. m	99.4	70	23	Has cold.
34	3 p. m	98.9	69	19	Some articular rheumatism.
35	3.15 p. m	99.6	54	20	Stomach somewhat disordered.
36	3.30 p. m	99.7	72	22	Pains in back.
41	7.40 a. m	97.6	50	16	Had not enough sleep.
43	10 a. m	100.4	87	22	Pains in the chest.
44	11.30 a. m	99.5	74	17	Stomach somewhat disordered.
46	12 m	100.1	72	21	Stomach disordered.
47	1 p. m	99.4	60	19	Tongue somewhat coated.
48	2 p. m	99.5	66	25	do.
81	9.15 a. m	99.1	68	19	Tongue yellowish-white.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*g*) **PIMA**—Continued

FEMALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
51	11 a. m.	[a] 97.6	75	22	Tongue whitish.
52	11.15 a. m.	99.6	84	16	Not fully well; probably stomach.
53	1.45 p. m.	100.8	80	20	Stomach disordered; rheumatism.
54	10.15 a. m.	100.4	64	21	Not well; probably ovary.
56	11 a. m.	99.5	82	23	Tongue somewhat coated.
57	12 m.	99.4	78	29	Pain in chest.
62	2 p. m.	99.6	80	24	"Chest sick."
64	1.15 p. m.	99.9	76	24	Tongue somewhat coated.
65	1.30 p. m.	100.2	78	28	Stomach disordered; probably rheumatism in hand.
66	1.45 p. m.	99.9	78	20	Not fully well.
67	3.30 p. m.	....	70	(?)	Stomach disordered.
68	3.45 p. m.	99.8	74	21	Tongue somewhat coated.
70	4.30–4.50 p. m.	99.2	86 72	17 18	Cough.
72	10 a. m.	99.2	88	19	Stomach disordered.
73	11 a. m.	100.4	70	20	Probably not fully well.
74	11.15 a. m.	100.2	74	18	Tongue clean.
75	11.30 a. m.	99.0	72	25	"Never fully well;" stomach.
76	11.45 a. m.	100.6	78	23	Tongue somewhat coated.
78	10.30 a. m.	100.5	90	22	Not well.
79	11 a. m.	99.4	70	19	Tongue somewhat coated.
80	11.30 a. m.	100.2	80	24	Not fully well; rheumatism.

(*h*) **MARICOPA**

MALE

[*In good health*]

1	1 p. m.	98.9	72	17	
10	10.15 a. m.	98.8	70	16	
11	10.30 a. m.	97.2	56	14	
17	3.15 p. m.	98.4	60	17	
23	10.30 a. m.	98.8	66	14	
24	10.45 a. m.	98.2	66	16	
33	4.30 p. m.	99.2	70	16	
35	9 a. m.	99.2	66	16	
39	10.30 a. m.	98.8	62	18	
40	11 a. m.	98.6	63	16	

FEMALE

[*In good health*]

69	12 m.	98.7	78 76	18	
71	1.10 p. m.	98.5	72	18	
80	10 a. m.	98.3	72	14	

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[a] 7 minutes.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*h*) **MARICOPA**—Continued

MALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
2	1.45 p. m	99.4	66	26	Tongue whitish.
4	4.15 p. m	99.8	75	19	Stomach disordered.
6	4.30 p. m	99.1	69	18	Some pain in the chest.
8	8.10 a. m	98.4	74	20	Tongue slightly coated.
9	10 a. m	99.8	72	14	Not fully well.
12	11.45 a. m	99.1	70	16	Tongue somewhat coated.
13	1.15 p. m	99.2	78	24	Some rheumatism.
14	2.15 p. m	97.9	63	21	Had no lunch.
15	2.25 p. m	99.4	74	22	Not fully well.
16	3 p. m	99.5	68	16	do.
19	4.45 p. m	99.4	60	18	Tongue very slightly furred.
21	5.15 p. m	99.6	74	14	Not fully well.
22	10 a. m	99.2	78	17	Tongue slightly coated.
26	11.30 a. m	99.5	76	15	do.
27	12.30 p. m	99.0	66	17	do.
28	1 p. m	99.1	58	21	Tongue heavily coated.
29	1.40 p. m	99.6	58	15	Tongue somewhat coated.
30	2.15 p. m	99.6	66	18	Tongue slightly coated.
36	9.15 a. m	99.3	66	20	Stomach slightly disordered.

FEMALE

[*Not in perfectly normal condition*]

51	1.30 p. m	99.5	74	21	Stomach disordered.
52	2 p. m	99.6	64	18	Tongue slightly coated
54	3 p. m	99.4	71	24	Not fully well.
55	3.30 p. m	100.2	68	20	Stomach disordered.
56	3.45 p. m	99.8	66	15	Tongue somewhat coated.
57	4 p. m	99.9	66	19	Stomach somewhat disordered.
	12.15 p. m	....	66	19	
59	9 a. m	99.9	72	19	Tongue somewhat coated.
60	....	....	....	....	Not fully normal.
61	10.30 a. m	96.4	60	16	Apparently well.
62	11 a. m	99.3	80	14	Tongue slightly furred.
65	1 p. m	98.8	76	20	Pain in the chest.
70	12.15 p. m	99.6	80	14	Tongue coated.
72	3 p. m	99.5	80	18	do.
73	3.15 p. m	99.8	70	18	do.
75	4 p. m	99.8	76	17	Tongue somewhat coated.
76	4.15 p. m	99.5	74	21	Tongue slightly whitish.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*i*) **MOHAVE**

MALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
1	10 a. m.	....	63	17	
3	10.20 a. m.	....	64	16	
4	11 a. m.	....	58	18	
5	2 p. m.	....	64	19	
6	3 p. m.	....	58	20	
11	10.10 a. m.	....	60	14	
16	2 p. m.	....	60	16	
17	3.10 p. m.	....	54	17	
20	9.30 a. m.	98.6	64	18	
23	9.25 a. m.	....	66	20	
26	10 a. m.	....	63	19	
28	12 m.	....	63	21	
43	1 p. m.	....	54	22	

FEMALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
51	11 a. m.	....	66	18	
59	11.30 a. m.	....	70	18	
76	10 a. m.	[a] 98.4	51	20	

MALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
7	3.40 p. m.	....	68	17	Tongue slightly coated.
10	9.40 a. m.	....	62	24	Tongue coated.
12	11 a. m.	....	63	24	Tongue slightly coated.
18	12 m.	....	66	20	Tongue somewhat coated.
19	9 a. m.	....	66	20	Tongue slightly coated.
21	3 p. m.	99.2	58	16	do.
31	1 p. m.	....	54	20	Fairly normal.
34	9 a. m.	....	60	22	Tongue somewhat coated.
35	10 a. m.	....	70	19	Quite well.
37	10.30 a. m.	....	60	17	Tongue whitish.
41	12.15 p. m.	....	66	18	Weak.
44	3.15 p. m.	....	Irreg.	20	Quite well.

[a] 7 minutes.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*i*) **MOHAVE**—Continued

FEMALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
52	11.15 a. m.		78	20	Tongue somewhat coated.
53	3.20 p. m.		74	20	do.
55	9 a. m.		76	16	do.
57	10.40 a. m.		72	17	Tongue slightly coated.
63	10.30 a. m.		72	16	do.
64	11 a. m.		76	23	Stomach somewhat disordered.
66	12.30 p. m.	100.1	67	20	Tongue slightly coated.
72	1.15 p. m.		72	19	Tongue slightly coated at base.

(*j*) **YUMA**

MALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
1	4.45 p. m.	98.6	58	19	
2	7.30 a. m.	98.0	57	16	
3	7.45 a. m.	96.8	64	17	Had breakfasted.
7	9.45 a. m.	[a] 96.3	54	18	do.
8	10 a. m.	98.2	58	16	
9	10.10 a. m.	98.1	68	19	
13	5.15 p. m.	99.1	62	14	
16	9 a. m.	98.6	72	16	
17	10 a. m.	98.9	62	20	
25	5 p. m.	[b] 98.2	58	16	
27	8.45 a. m.	[b] 98.3	64	22	
28	9.15 a. m.	98.6	56	15	

FEMALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
2a	1 p. m.	(?)	66	15	

[a] 8 minutes.

[b] 6 minutes.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*j*) **YUMA**—Continued

MALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
4	8 a. m	98.8	76 72	19	Tongue clean.
5	8.15 a. m	[a]96.6	60	17	Tongue clean (had breakfasted).
6	9.20 a. m	98.6	72	21	Tongue slightly coated.
10	2 p. m	99.4	74	20	Probably incipient tuberculosis.
11	4.45 p. m	100.4	72	19	Not fully normal.
12	5 p. m	99.5	68	18	Tongue clean.
14	9.05 a. m	99.1	72	16	Stomach somewhat disordered.
19	11.45 a. m	99.2	63	14	Tongue slightly coated.
20	3 p. m	99.3	72	15	Normal after exercise.
22	3.45 p. m	99.2	76	18	Not fully well.
23	4.30 p. m	99.0	63	20	Tongue coated.
26	8.30 a. m	[b]97.4	72	17	do.
29	11 a. m	99.2	72	20	Headache.

FEMALE

[*Not in perfectly normal condition*]

5a	1.15 p. m	99.9	76	16	Tongue somewhat coated.

(*k*) **YAQUI**

MALE

[*In good health*]

1	4 p. m	(100.2)	72	15
2	4.15 p. m	99.9	72	20
5	5 p. m	(101.3)	72	18
7	5.30 p. m	99.6	72	20
8	5.45 p. m	99.8	51	15
11	8.30 a. m	98.3	57	15
15	9.30 a. m	98.9	62	18

MALE

[*Not in perfectly normal condition*]

6	5.15 p. m	100.5	80	15	Tongue clean; probably some drink.
9	6 p. m	100.2	68	20	Tongue whitish.
10	6.15 p. m	100.6	75	20	do.
14	9.15 a. m	99.2	68	19	Tongue slightly whitish.
19	11 a. m	99.4	72	15	Tongue somewhat coated.

[a] 7 minutes.

[b] 6 minutes.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*l*) **TARAHUMARE**

MALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
1		98.6	65	17	
2		97.3	66	19	
3		98.0	68	22	
5		98.2	64	18	
6		97.4	66	15	Several days after a "frio;" well and rested when examined.
7		97.6	66	18	
8		96.2	68	18	Two tests of temperature; same results. Cause?
9		97.2	78	18	
10		99.1	64	22	
11		98.4	60	(24)	
12		99.0	64	17	
13		99.2	66	22	
14		99.1	58	18	
15		99.0	62	22	
17		98.8	66	19	
19		(?)	66	19	
20	10 a. m.	97.8	54	15	15 minutes rest after a dance; no drink.
21		98.5	62	17	
23		98.4	68	19	

FEMALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
a		97.7	78	19	Slightly nervous during the tests.
b		98.6	78	19	do.
c		98.6	70	20	do.
e		99.0	64	(22)	do.
g		98.9	78	16	do.
h		99.3	70	18	do.
i		99.4	70	19	do.

MALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
4		(100.0)	62	(24)	Not fully well.
16		(99.6)	(68)	(28)	do.
18		(99.4)	(?)	(22)	do.

FEMALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
d		(?)	(76)	(24)	Not fully well.
f		(99.8)	(78)	(20)	Some headache, and pains in body.
j		(98.1)	(88)	(21)	Headache.

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*m*) **HUICHOL**

MALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua.)	Pulse.	Respiration.	Remarks.
2	9 a. m.	98. 1	58	19	
5	12 m.	98. 2	56	16	
7	.....do.	98. 5	(?)	16	
11	10 a. m.	97. 8	74	16	
14	3.30 p. m.	98. 5	72	(23)	1½ hours after a walk of several miles.
15	5 p. m.	98. 9	68	22	At rest.
16	9 a. m.	97. 6	66	17	Fully at rest; had breakfasted.
17	.....do.	98. 0	66	18	After a walk of about a mile; at rest.
18	10 a. m.	98. 0	68	20	1 hour after a walk of about a mile; at rest.
24	12 m.	98. 3	67	22	At rest.
26	1 p. m.	97. 7	54	16	Before dinner, normal; at rest.
27	.....do.	98. 6	66	20	Normal; at rest.
32	6.30 a. m.	97. 1	56	15	At rest after a walk, normal; had a little breakfast.
36	9.30 a. m.	96. 6	58	16	At rest.
37	3 p. m.	98. 8	72	20	do.
40	11 a. m.	98. 8	66	19	do.
41	1 p. m.	98. 6	62	18	do.

FEMALE

[*In good health*]

3	9 a. m.	98. 8	76	22	
6	12 m.	98. 5	62	18	
19	10 a. m.	98. 3	64	22	At rest.
22	11 a. m.	98. 8	74	16	do.
25	1 p. m.	98. 8	68	22	Fully at rest and normal.
28	2 p. m.	98. 5	66	17	At rest.
30	3 p. m.	(99. 8)	68	(23)	At rest after a walk.
31	5 p. m.	98. 6	68	20	At rest.
33	8 a. m.	98. 4	64	17	do.
34	9 a. m.	99. 3	66	20	do.
35	.....do.	98. 5	(84)	18	do.
39	10 a. m.	99. 3	(82)	22	do.

MALE

[*Not in perfectly normal condition*]

1	4 p. m.	99. 6	68	19	Some headache.
4	10 a. m.	98. 6	78	22	Immediately after a meal.
10	4 p. m.	98. 5	(88)	(22)	Not fully well.
13	3 p. m.	99. 2	82	23	1 hour after a walk of several miles.
21	11 a. m.	(99. 3)	(94)	(21)	Drank some sotol.
29	3 p. m.	98. 3	76	16	At rest after a walk.

III. Indian Adults—Continued

Table 6. *Data on temperature, pulse, and respiration*—Continued

(*m*) **HUICHOL**—Continued

FEMALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
8	12 m	(99.2)	(82)	(22)	Not fully well.
9	4 p. m	98.9	(90)	(20)	Some headache.
12	10 a. m	(98.4)	(90)	(24)	Not fully well.
20	11 a. m	98.7	88	19	At rest. Cause of pulse?
23	12 m	98.8	(90)	18	At rest; slight cough.
38	9 a. m	98.9	84	22	At rest; had a little sotol in morning, about an hour before.
43	10 a. m	(100.0)	(86)	(20)	Some malaria or stomach trouble.

(*n*) **OTOMI**

MALE

[*In good health*]

3	10.15 a. m	(?)	62	16	
4	11.30 a. m	98.9	58	18	
17	2.30 p. m	(?)	62	18	
30	6 p. m	(?)	70	16	

MALE

[*Not in perfectly normal condition*]

5	11.45 a. m	98.7	76 72	20	Tongue somewhat coated.
7	2 p. m	99.6	72	22	do.
16	2.15 p. m	(?)	68	17	Tongue slightly coated.
25	4.30 p. m	(?)	66	18	do.
31	8.40 a. m	(?)	66	16	do.

(*o*) **TARASCO**

MALE

[*In good health*]

1	4.30 p. m	....	60	20	
7	8.30 a. m	....	52	16	
13	10.10 a. m	....	58	13	
14	11 a. m	....	60	18	
20	1 p. m	....	60	18	
24	2.20 p. m	....	60	16	
34	5.20 p. m	....	58	15	
39	10.20 a. m	....	62	19	

III. INDIAN ADULTS—Continued

TABLE 6. *Data on temperature, pulse, and respiration*—Continued

(*o*) **TARASCO**—Continued

FEMALE

[*In good health*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
j	8.15 a. m	....	60	20	
s	1.45 p. m	....	68	16	
A	6.40 p. m	....	71	16	

MALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
8	9 a. m	....	60	18	Tongue slightly coated.
19	12.45 p. m	....	48	14	do.
26	3.10 p. m	....	....	....	Tongue somewhat coated.
31	4.40 p. m	....	....	....	Tongue yellowish.
43	12 m	....	66	22	Tongue clean.

FEMALE

[*Not in perfectly normal condition*]

Record no.	Time of the day.	Temperature (sub lingua).	Pulse.	Respiration.	Remarks.
d	1.30 p. m	....	66	19	Tongue slightly coated.
i	8 a. m	....	68	21	do.
o	10 a. m	....	72	18	Tongue clean.
r	1 p. m	....	60	17	Tongue slightly coated.
w	4 p. m	....	66	17	do.
B	7 a. m	....	70	14	Tongue somewhat coated.
D	7.15 a. m	....	66	16	Tongue slightly coated.

III. Indian Adults—Continued.

Table 7. *Tests of muscular strength, in kilos*

(*a*) **APACHE**

MALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
2	25	53.0	45.0	32.0
3	25	35.0	34.5	28.0
6	30	41.5	43.0	27.0
7	28	39.5	42.5	27.0
8	26	55.0	47.0	33.0
9	24	42.5	41.0	24.0
10	27	42.0	40.0	31.0
11	28	43.0	39.5	32.0
12	28	41.5	33.5	28.0
13	26	39.5	32.5	23.0
14	24	42.0	35.5	29.0
15	25	53.0	43.5	31.0
17	25	45.0	41.0	26.0
18	28	49.5	50.5	32.0
19	28	51.0	51.0	30.5
20	30	50.0	48.5	35.0
22	26	41.5	35.0	24.0
26	25	52.0	48.5	34.0
28	29	58.5	52.0	35.0
29	27	46.0	39.0	29.0
31	28	46.0	51.5	33.0
32	30	42.5	40.0	26.0
33	24	51.5	51.0	33.0
34	28	45.0	45.0	31.5
38	26	37.5	33.0	25.0
40	28	45.5	41.0	31.0
42	30	45.0	42.0	33.0
43	26	40.5	43.0	26.0
46	28	51.5	49.5	30.0
48	24	46.0	49.5	30.5
49	28	48.0	42.0	32.0
50	27	47.0	44.0	31.5
Average		*45.8*	*42.9*	*29.8*
Minimum		35.0	32.5	23.0
Maximum		58.5	52.0	35.0

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 30 to 40 years				
21	40	35.0	35.0	25.0
23	40	47.0	49.0	30.5
24	40	39.0	35.0	25.5
27	32	50.0	47.5	32.0
30	35	42.5	45.0	27.5
35	35	47.5	41.5	33.0
Average		*43.5*	*42.2*	*28.9*
Minimum		35.0	35.0	25.0
Maximum		50.0	49.0	33.0
Age: 40 to 50 years				
1	45	48.0	47.0	30.0
4	45	47.5	47.0	27.0
5	45	37.5	34.5	25.0
16	45	41.0	43.0	22.0
25	50	28.5	33.0	18.5
37	45	48.0	46.5	26.0
39	45	30.5	32.5	22.0
41	50	35.5	31.5	22.5
44	50	34.0	29.5	24.0
45	50	24.0	28.5	17.0
47	45	44.5	45.0	32.0
Average		*38.1*	*38.0*	*24.2*
Minimum		25.0	24.0	28.5
Maximum		48.0	47.0	32.0
Age: 50 to 60 years				
36	55	40.0	38.0	28.5

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*a*) **APACHE**—Continued

FEMALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
53	26	31.0	31.5	16.0
56	28	31.0	32.0	22.0
59	23	26.5	21.5	21.0
60	30	32.0	28.5	23.0
66	24	25.0	28.5	19.0
67	28	24.0	23.0	20.5
68	26	18.5	21.0	15.0
69	24	25.5	27.5	20.5
71	23	27.5	28.0	21.0
76	28	29.0	22.5	19.0
79	24	26.5	22.0	18.0
80	25	25.5	23.0	20.0
Average		*26.8*	*25.8*	*19.6*
Minimum		18.5	21.0	15.0
Maximum		32.0	32.0	23.0
Age: 30 to 40 years				
51	40	31.0	25.0	10.5
52	33	28.0	27.5	17.0
54	38	27.5	29.0	23.5
57	40	33.5	29.0	25.0
58	35	29.5	24.5	15.0
61	38	17.5	20.0	17.5
63	40	18.5	18.5	14.0
Age: 30 to 40 years—Continued.				
65	40	29.5	30.0	18.0
Average		*26.9*	*25.4*	*17.6*
Minimum		17.5	18.5	10.5
Maximum		33.5	30.0	25.0
Age: 40 to 50 years				
55	50	27.0	23.0	13.0
70	45	20.5	22.5	23.0
73	45	27.0	25.5	19.5
74	45	22.5	21.5	16.0
75	50	23.5	26.0	18.5
78	45	23.0	21.0	13.0
Average		*23.9*	*23.3*	*17.2*
Minimum		20.5	21.0	13.0
Maximum		27.0	26.0	23.0
Age: 50 to 60 years				
62	60	17.5	15.5	12.5
64	60	17.5	17.5	21.0
72	65	14.0	12.5	12.0
77	60	19.5	17.5	16.5
Average		*17.1*	*15.8*	*15.6*
Minimum		14.0	12.5	12.0
Maximum		19.5	17.5	21.0

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*b*) **PUEBLOS**

MALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
1	24	35.5	38.0	19.0
4	23	50.5	44.0	24.0
7	24	51.0	50.0	27.0
9	28	58.5	54.0	29.0
10	26	48.0	41.0	30.0
12	30	38.0	35.0	18.0
14	25	28.5	28.5	15.5
15	23	45.5	42.5	24.0
17	24	43.5	39.5	28.0
21	30	32.5	32.5	16.5
26	28	44.5	43.5	26.0
29	25	42.0	36.0	27.0
30	28	35.0	37.5	21.5
34	29	44.5	39.0	26.0
35	26	35.5	32.5	22.0
36	28	42.0	37.0	25.0
41	29	46.5	43.0	24.0
43	28	26.5	26.0	16.0
46	30	45.0	45.0	27.0
85	28	42.5	36.5	24.0
86	30	(?)	34.0	19.5
Average		*41.8*	*38.9*	*23.3*
Minimum		26.5	26.0	15.5
Maximum		58.5	54.0	30.0
Age: 30 to 40 years				
2	40	36.0	33.0	23.0
6	35	42.0	36.5	24.5
13	35	41.0	38.5	20.0
16	40	40.0	34.0	25.0
19	32	38.5	34.5	28.0
23	40	51.0	41.0	28.0
24	37	39.5	29.0	27.0
27	36	53.5	53.5	26.0
31	40	39.5	37.0	23.0
33	35	52.0	45.0	25.5
39	32	52.5	43.5	25.5
47	32	41.5	41.5	25.0
48	33	43.5	40.5	26.5
49	35	40.5	39.5	30.0
83	32	38.0	33.5	27.5
Age: 30 to 40 years—Continued.				
84	40	42.5	41.0	26.5
90	33	46.0	44.0	26.5
Average		*43.4*	*39.1*	*25.7*
Minimum		36.0	29.0	20.0
Maximum		53.5	53.5	30.0
Age: 40 to 50 years				
3	45	43.5	41.0	22.0
5	50	42.0	40.0	23.0
8	45	31.5	26.5	18.0
18	50	29.0	31.0	25.0
22	50	39.0	36.0	24.5
32	50	32.5	32.0	17.5
37	50	33.0	40.0	21.0
38	48	30.0	30.5	22.0
44	45	35.0	32.0	21.0
81	45	39.5	39.0	24.0
82	45	36.5	37.0	25.0
89	50	35.0	29.0	20.0
Average		*35.5*	*34.5*	*21.9*
Minimum		29.0	26.5	17.5
Maximum		43.5	41.0	25.0
Age: 50 to 60 years				
11	55	28.5	26.0	13 0
20	52	34.0	31.5	17.0
25	55	31.0	30.0	16.0
28	55	35.5	33.5	18.0
40	55	38.5	33.5	22.0
45	65	18.0	15.0	13.0
50	60	29.5	23.0	16.0
87	60	29.0	24.0	15.0
88	60	28.0	26.5	17.5
Average		*30.2*	*27.0*	*16.4*
Minimum		18 0	15.0	13.0
Maximum		38.5	33.5	22.0

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*b*) **PUEBLOS**—Continued

FEMALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
51	25	27.0	26.0	16.0
52	30	28.0	23.0	19.0
53	28	25.5	22.5	16.0
57	27	20.5	18.0	15.0
61	26	19.0	16.5	13.0
62	29	21.5	24.0	14.0
65	28	25.0	23.5	15.5
66	27	25.5	25.5	17.0
67	24	27.5	24.0	13.0
68	29	22.0	19.5	16.0
73	24	28.5	26.5	14.5
74	27	26.0	26.0	17.5
77	26	27.0	23.0	16.5
79	29	24.0	22.5	16.0
80	24	27.0	23.0	18.0
Average		*24.9*	*22.9*	*15.8*
Minimum		19.0	16.5	13.0
Maximum		28.5	26.5	19.0
Age: 30 to 40 years				
58	40	17.5	16.5	14.5
59	33	19.0	18.5	14.0
64	35	24.0	24.0	18.0
71	40	20.0	18.5	15.0
Age: 30 to 40 years—Continued.				
75	35	21.5	21.5	19.5
78	38	23.5	23.5	16.0
Average		*20.9*	*20.5*	*16.2*
Minimum		17.5	16.5	14.0
Maximum		24.0	24.5	19.5
Age: 40 to 50 years				
56	45	20.5	20.5	12.0
60	45	24.5	20.5	15.0
63	50	25.0	23.5	15.5
69	45	24.0	21.0	13.0
70	50	20.0	17.0	12.0
76	45	20.0	20.0	14.5
Average		*22.3*	*20.4*	*13.7*
Minimum		20.0	17.0	12.0
Maximum		25.0	23.5	15.5
Age: 50 to 60 years				
54	55	17.5	16.0	12.0
72	60	22.5	19.5	13.5

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*c*) **HOPI**

MALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
2	26	42.5	35.0	30.0
6	30	41.5	39.5	25.0
10	25	40.0	37.0	32.0
13	25	46.0	37.0	29.0
14	26	39.0	37.0	26.0
15	28	37.5	33.5	25.5
16	28	39.0	33.5	26.0
17	26	39.5	36.5	29.0
18	30	38.5	38.5	25.0
25	26	42.5	42.5	28.5
26	27	41.0	40.5	25.0
27	24	40.5	37.5	24.5
31	30	41.0	34.0	24.0
33	28	25.0	20.0	12.5
37	27	43.5	40.5	32.0
38	26	36.0	37.0	28.5
39	28	51.5	44.5	34.0
41	25	43.0	40.0	30.0
43	26	56.0	52.5	37.5
46	27	39.5	33.0	31.0
51	27	39.0	33.0	26.0
54	30	47.0	42.0	25.0
55	28	35.5	32.0	27.0
58	25	55.5	46.5	35.0
59	26	48.0	41.5	25.0
60	23	47.0	35.5	31.0
Average		*42.1*	*37.7*	*27.8*
Minimum		25.0	20.0	12.5
Maximum		56.0	52.5	37.5
Age: 30 to 40 years				
3	35	47.0	35.0	29.0
7	32	47.5	45.0	29.0
8	38	33.5	25.0	22.0
11	35	41.0	39.0	32.5
12	35	41.0	39.0	32.5
22	40	42.5	37.0	31.0
23	35	45.5	41.5	25.0
29	38	35.0	31.5	23.0
34	35	35.0	25.5	28.0

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 30 to 40 years—Continued				
44	32	44.5	35.5	22.5
47	33	41.0	36.5	27.0
48	38	36.0	31.0	24.5
52	40	35.0	29.0	23.0
53	33	35.5	39.5	20.0
Average		*40.2*	*35.1*	*26.3*
Minimum		33.5	25.0	20.0
Maximum		47.5	45.0	32.5
Age: 40 to 50 years				
19	45	40.0	36.5	25.0
24	50	33.0	24.5	19.0
30	50	34.0	31.5	19.5
35	43	35.0	32.0	22.0
36	50	34.5	23.0	23.0
57	50	34.0	38.0	25.0
Average		*35.1*	*30.9*	*26.3*
Minimum		33.0	23.0	19.0
Maximum		40.0	38.0	25.0
Age: 50 to 60 years				
1	55	33.5	28.5	23.0
4	60	34.0	27.5	22.0
5	60	32.5	22.5	22.0
9	60	28.5	22.0	23.0
20	60	42.0	36.0	22.0
32	60	31.5	23.5	20.5
40	55	30.0	25.0	19.0
42	60	29.5	29.5	19.0
45	55	31.5	26.0	24.0
49	55	35.5	26.0	22.5
50	60	36.0	33.5	22.0
56	60	24.0	25.0	14.0
Average		*32.4*	*27.1*	*21.0*
Minimum		24.0	22.0	14.0
Maximum		42.0	36.0	24.0

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(c) **HOPI**—Continued

FEMALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
62	30	25.0	22.5	15.0
63	28	35.0	26.5	20.0
71	30	29.0	21.0	16.0
72	24	26.0	25.0	21.0
75	28	29.5	23.5	18.0
77	25	23.0	22.0	16.5
78	26	26.5	23.5	14.0
81	30	25.5	23.0	15.0
83	25	25.0	20.5	17.5
85	26	22.0	21.0	19.0
Average		*26.7*	*22.9*	*17.2*
Minimum		22.0	20.5	14.0
Maximum		35.0	26.5	21.0
Age: 30 to 40 years				
64	35	27.5	26.0	21.0
65	35	25.0	22.5	17.0
66	40	30.0	25.5	15.0
73	35	22.0	20.5	14.0
74	38	22.0	21.0	14.5
76	32	33.0	31.5	18.0
79	40	20.0	19.5	12.5
84	35	24.5	21.0	16.5
88	38	20.0	18.5	16.0
Age: 30 to 40 years—Continued				
90	40	25.0	21.5	17.5
Average		*24.9*	*22.8*	*16.2*
Minimum		20.0	18.5	12.5
Maximum		33.0	31.5	21.0
Age: 40 to 50 years				
82	50	13.0	13.0	11.0
86	45	32.0	24.0	17.0
87	45	21.5	21.0	13.5
Average		*22.2*	*19.3*	*13.8*
Minimum		13.0	13.0	11.0
Maximum		32.0	24.0	17.0
Age: 50 to 60 years				
61	55	21.5	21.0	16.0
67	55	22.0	19.0	11.0
68	55	20.5	19.0	13.5
69	60	21.0	21.5	13.0
70	55	22.5	18.5	14.0
80	55	22.5	21.0	15.5
89	55	24.0	23.5	19.0
Average		*22.0*	*20.5*	*14.6*
Minimum		20.5	18.5	11.0
Maximum		24.0	23.5	19.0

III. Indian Adults—Continued

Table 7. *Tests of muscular strength, in kilos*—Continued

(*d*) ZUÑI

MALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
2	24	40.0	40.0	26.5
3	26	43.5	39.0	26.5
4	25	36.0	31.0	23.0
6	26	37.0	33.5	24.0
7	27	37.0	31.5	19.0
8	25	35.0	35.0	20.5
15	27	45.0	43.5	29.0
17	28	50.0	45.0	36.0
18	26	43.5	39.5	30.0
19	29	47.0	46.0	32.0
22	30	42.5	37.0	26.0
25	28	43.5	34.0	26.0
28	23	42.5	38.0	24.0
30	30	47.0	42.0	32.0
33	28	39.0	38.5	23.0
35	29	41.0	37.0	27.0
42	30	36.0	35.0	22.0
43	30	39.0	36.0	25.5
47	26	35.0	35.0	26.0
48	28	36.0	37.0	29.0
49	26	51.5	42.0	31.0
53	29	41.0	38.5	24.5
54	28	42.0	41.0	25.0
56	28	44.5	41.0	27.5
57	30	43.0	39.0	30.5
Average		*41.5*	*38.2*	*26.6*
Minimum		35.0	31.0	19.0
Maximum		51.5	46.0	36.0
Age: 30 to 40 years				
5	35	37.0	37.5	24.5
10	40	50.0	42.0	37.0
12	35	34.0	31.5	22.0
16	33	(?)	36.0	24.0
20	38	44.0	43.5	30.0
21	40	32.0	27.5	20.5
23	33	47.5	38.5	35.0
26	32	38.5	40.0	25.0
39	35	37.0	36.0	19.0
41	40	33.0	27.0	20.0
44	35	36.5	33.0	22.0
Age: 30 to 40 years—Continued				
51	33	36.0	34.0	19.0
52	36	28.5	28.0	21.5
55	32	38.5	35.0	27.5
59	38	40.0	37.5	25.5
Average		*38.0*	*35.1*	*24.8*
Minimum		28.5	27.0	19.0
Maximum		50.0	43.5	37.0
Age: 40 to 50 years				
9	45	(?)	32.5	22.0
13	45	51.5	46.5	30.0
24	50	(?)	28.0	(?)
27	45	44.0	42.5	27.5
29	50	39.5	33.0	24.5
31	45	38.5	32.0	21.0
34	45	44.0	36.0	27.0
36	50	31.5	29.0	25.0
38	45	35.0	30.5	20.0
46	50	33.5	31.0	21.0
Average		*39.7*	*34.1*	*24.2*
Minimum		31.5	28.0	20.0
Maximum		51.5	46.5	30.0
Age: 50 to 60 years				
1	55	28.0	27.0	20.0
11	55	32.0	23.0	14.0
14	55	27.0	28.0	21.0
32	65	27.0	18.0	23.5
37	60	27.5	29.5	16.0
40	55	41.5	36.0	21.5
45	55	31.5	26.0	15.0
50	55	25.0	25.5	20.0
58	55	28.0	26.0	21.0
60	55	26.0	24.5	20.0
Average		*29.3*	*26.3*	*19.2*
Minimum		25.0	18.0	14.0
Maximum		41.5	36.0	23.5

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*d*) **ZUÑI**—Continued

FEMALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
61	24	24.0	18.5	15.0
65	28	25.0	23.5	19.0
67	30	26.5	25.0	20.0
77	28	33.5	34.5	20.0
87	24	27.0	26.0	19.5
89	27	30.0	25.5	17.5
Average		*27.7*	*25.5*	*18.5*
Minimum		24.0	18.5	15.0
Maximum		33.5	34.5	20.0
Age: 30 to 40 years				
66	40	30.0	22.0	17.0
72	33	30.0	27.5	21.0
79	35	27.5	25.0	19.5
80	35	22.0	17.5	15.0
81	40	19.5	17.0	13.0
82	33	19.5	18.0	15.5
85	32	22.5	22.5	15.0
Average		*24.4*	*21.4*	*16.6*
Minimum		19.5	17.0	13.0
Maximum		30.0	27.5	21.0
Age: 40 to 50 years				
63	50	23.0	19.0	15.0
Age: 40 to 50 years—Continued				
64	50	20.0	21.5	14.5
70	45	24.0	23.0	15.5
71	50	21.0	19.5	15.0
73	50	22.5	21.0	12.0
74	45	23.5	25.0	16.0
75	45	21.0	23.0	18.0
76	50	26.5	24.0	17.5
78	45	27.5	24.0	20.0
83	50	20.0	19.0	12.5
86	50	26.0	20.5	22.0
88	50	22.0	19.5	14.0
90	50	20.0	19.5	15.5
Average		*22.9*	*21.4*	*15.9*
Minimum		20.0	19.0	12.0
Maximum		27.5	25.0	22.0
Age: 50 to 60 years				
62	55	19.5	21.5	11.0
68	55	17.0	18.0	10.0
69	55	(?)	19.5	10.0
84	55	24.5	20.0	13.5
Average		*20.3*	*19.8*	*11.1*
Minimum		17.0	18.0	10.0
Maximum		24.5	21.5	13.5

III. Indian Adults—Continued

Table 7. *Tests of muscular strength, in kilos*—Continued

(*e*) MOHAVE

MALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand	
Age: 20 to 30 years				
7	26	38.0	33.5	21.0
18	26	32.5	30.0	12.0
23	28	41.0	37.0	26.5
25	29	48.0	44.5	28.0
30	26	37.0	29.5	27.5
34	25	48.5	42.5	25.0
35	24	44.0	37.5	21.0
36	27	33.0	33.5	22.0
40	25	39.5	31.0	18.0
42	24	46.0	44.5	20.0
43	26	48.0	39.0	30.5
45	28	54.0	47.0	31.0
Average	......	*42.5*	*37.4*	*23.5*
Minimum	......	32.5	29.5	12.0
Maximum	......	54.0	47.0	31.0
Age: 30 to 40 years				
2	37	50.0	46.0	30.0
6	32	58.5	47.0	32.0
8	38	43.5	36.5	24.0
14	40	32.0	33.0	24.0
20	40	43.5	37.0	34.0
26	35	48.5	44.0	30.5
29	32	48.0	46.5	23.0
32	35	43.0	37.5	23.0
Average	......	*45.9*	*40.9*	*27.6*
Minimum	......	32.0	33.0	23.0
Maximum	......	58.5	47.0	34.0
Age: 40 to 50 years				
1	47	47.5	43.0	25.5
4	50	39.0	34.0	23.5
11	50	42.5	37.5	17.0
12	48	35.0	32.0	18.0
15	45	32.0	27.5	20.0
17	50	41.5	31.0	24.0
24	50	23.0	20.0	23.5
28	45	47.0	41.0	29.5
31	50	41.5	34.0	26.5
33	50	32.5	30.5	29.0
Average	......	*38.2*	*33.1*	*23.7*
Minimum	......	23.0	20.0	17.0
Maximum	......	47.5	43.0	29.5
Age: 50 to 60 years				
3	54	29.5	31.0	23.0
5	55	22.0	21.0	9.0
10	55	26.0	21.0	15.5
16	55	27.5	24.0	12.5
19	55	25.0	23.5	13.0
38	55	42.0	30.0	19.0
41	60	26.0	19.5	....
44	55	32.5	28.5	24.5
Average	......	*28.8*	*24.8*	*16.6*
Minimum	......	22.0	19.5	9.0
Maximum	......	42.0	31.0	24.5

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*e*) **MOHAVE**—Continued

FEMALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
52	24	22.0	19.0	12.5
55	30	31.5	22.0	14.0
59	26	27.0	21.5	8.0
61	26	27.5	25.0	19.5
74	25	31.0	29.5	16.5
Average		*27.8*	*16.7*	*10.1*
Minimum		22.0	19.0	8.0
Maximum		31.5	29.5	19.5
Age: 30 to 40 years				
51	35	26.0	26.0	13.5
53	36	15.0	16.0	12.5
54	40	30.5	24.0	13.0
56	40	29.0	20.5	17.5
57	32	24.5	20.0	13.0
60	36	27.5	22.0	13.0
63	35	27.5	22.0	13.0
66	40	21.0	20.0	15.5
73	35	27.5	21.5	12.0
Age: 30 to 40 years—Continued				
76	33	29.5	22.0	18.5
Average		*25.8*	*21.3*	*14.4*
Minimum		15.0	16.0	12.0
Maximum		30.5	26.0	18.5
Age: 40 to 50 years				
62	50	22.0	22.5	(?)
64	50	22.0	16.5	12.0
65	50	19.5	17.0	13.0
67	45	22.0	21.5	7.5
69	45	33.5	28.0	15.0
70	45	26.5	23.5	14.5
71	45	26.0	25.0	13.0
72	50	28.0	22.0	14.5
Average		*24.9*	*22.0*	*12.8*
Minimum		19.5	16.5	7.5
Maximum		28.0	28.0	15.0
Age: 50 to 60 years				
58	55	19.0	15.0	10.5

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*f*) YUMA

MALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
2	24	47.5	43.0	32.0
5	29	51.5	36.5	27.0
11	28	31.0	41.0	24.0
14	27	45.0	36.5	32.0
15	25	36.5	(?)	17.0
16	29	58.5	50.0	32.5
18	25	43.5	43.5	29.0
19	25	42.0	41.0	23.0
20	25	35.5	31.0	21.0
21	26	49.5	44.5	33.0
22	25	35.0	32.0	15.0
25	30	60.0	52.0	31.0
27	27	46.0	40.5	22.0
Average		*44.7*	*40.9*	*26.0*
Minimum		31.0	31.0	15.0
Maximum		60.0	52.0	33.0
Age: 30 to 40 years				
4	32	55.0	36.5	31.5
10	33	34.0	30.0	21.0
13	32	53.5	40.0	26.0
28	38	45.5	40.0	25.0
Average		*47.0*	*36.6*	*25.9*
Minimum		34.0	30.0	21.0
Maximum		55.0	40.0	31.5
Age: 40 to 50 years				
1	50	40.5	30.5	28.0
8	50	35.0	37.0	33.5
12	45	29.5	25.0	12.5
17	50	34.5	31.5	17.0
23	45	32.5	28.5	17.0
24	50	45.0	30.5	27.5
26	47	46.5	32.5	20.5
29	50	47.0	37.5	24.5
Average		*38.8*	*31.6*	*22.6*
Minimum		29.5	25.0	12.5
Maximum		47.0	37.5	33.5
Age: 50 to 60 years				
3	55	47.5	40.0	33.0
6	53	46.0	37.5	31.0
7	55	42.0	36.5	32.0
9	60	29.5	29.0	13.0
Average		*41.3*	*35.8*	*27.3*
Minimum		29.5	29.0	13.0
Maximum		47.5	40.0	30.0

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*f*) **YUMA**—Continued

FEMALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
2a	30	27.5	21.5	13.0
3a	24	16.5	17.0	4.0
Average		*22.0*	*19.3*	*8.5*
Age: 30 to 40 years				
1a	40	32.0	29.0	18.0
4a	32	20.0	16.0	5.0
Average		*26.0*	*22.5*	*11.5*
Age: 40 to 50 years				
5a	50	23.0	20.0	15.0

(*g*) **MARICOPA**

MALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
7	[illegible]	58.0	49.0	33.0
9	30	45.0	32.5	22.0
15	25	40.5	39.0	26.5
23	29	58.5	44.5	33.0
29	28	50.0	44.5	31.0
31	30	51.5	50.0	32.0
34	29	48.5	44.5	29.5
35	25	48.0	38.0	31.5
36	28	53.0	41.5	36.0
39	26	36.0	27.0	24.5
Average		*48.9*	*41.1*	*29.9*
Minimum		36.0	27.0	22.0
Maximum		58.5	50.0	36.0
Age: 30 to 40 years				
1	38	35.0	31.0	18.0
3	32	32.0	28.5	16.0
5	40	53.0	43.5	24.5
10	35	51.5	46.5	29.0
13	40	38.5	34.0	21.5
14	32	46.0	35.0	32.0
19	40	46.0	36.0	32.0
20	40	61.0	57.0	34.0
Age: 30 to 40 years—Continued				
21	40	51.5	48.5	34.0
22	40	43.0	39.5	24.0
24	32	46.0	40.0	30.0
30	38	40.5	36.5	19.0
32	35	42.0	35.0	24.5
38	40	50.0	49.5	36.5
40	38	38.5	35.5	22.0
Average		*44.9*	*39.7*	*26.5*
Minimum		32.0	28.5	16.0
Maximum		61.0	57.0	36.5
Age: 40 to 50 years				
4	50	46.0	34.5	16.0
16	50	40.5	35.0	22.0
18	50	45.0	41.5	31.0
25	45	43.0	40.5	21.0
26	45	47.5	43.5	26.0
27	45	46.0	42.0	30.0
33	45	43.5	38.5	(?)
37	45	52.5	45.0	32.0
Average		*45.5*	*40.1*	*25.4*
Minimum		40.5	34.5	16.0
Maximum		52.5	45.0	32.0

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*g*) **MARICOPA**—Continued

MALE—Continued

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 50 to 60 years				
2	55	43.0	36.0	23.0
6	60	47.5	35.5	25.5
8	53	35.0	31.5	19.5
11	55	30.5	26.5	18.0
12	55	28.0	25.5	15.0
17	60	26.5	22.5	17.0
28	60	34.0	30.5	22.0
Average		*34.9*	*29.7*	*20.0*
Minimum		26.5	22.5	15.0
Maximum		47.5	36.0	25.5

FEMALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
53	24	37.5	31.0	17.0
60	28	29.0	24.5	13.5
62	30	34.0	30.5	20.0
63	30	30.5	25.0	18.0
66	28	32.5	27.0	17.5
71	29	28.5	27.5	17.0
72	29	23.5	30.0	18.0
74	30	28.5	27.0	17.5
75	30	30.0	27.5	15.5
79	28	26.0	25.0	18.0
Average		*30.0*	*27.5*	*17.2*
Minimum		23.5	24.5	13.5
Maximum		37.5	31.0	20.0
Age: 30 to 40 years				
51	40	24.0	25.0	17.0
55	40	21.5	20.5	12.5
56	35	24.5	21.5	17.0
57	33	28.0	20.0	12.0
58	33	25.0	23.5	12.0
68	40	21.0	20.5	6.0
69	35	40.0	32.0	17.0
70	38	24.5	24.0	17.5
73	40	23.5	24.0	13.0
76	35	31.5	27.0	20.0
Age: 30 to 40 years—Continued				
78	35	22.0	22.0	13.0
80	35	28.0	28.0	14.5
Average		*26.1*	*24.0*	*14.3*
Minimum		21.0	20.0	6.0
Maximum		40.0	32.0	20.0
Age: 40 to 50 years				
54	50	18.0	14.0	8.0
59	50	17.0	15.0	(?)
64	50	15.0	14.5	11.0
65	45	21.0	18.5	7.5
67	50	22.0	20.0	8.0
Average		*18.6*	*16.4*	*8.6*
Minimum		15.0	14.0	7.5
Maximum		22.0	20.0	11.0
Age: 50 to 60 years				
52	55	21.5	18.5	15.0
61	55	21.5	21.0	10.0
77	55	19.0	17.0	3.5
Average		*20.7*	*18.8*	*9.5*
Minimum		19.0	17.0	3.5
Maximum		21.5	21.0	15.0

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*h*) PAPAGO

MALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
1	30	36.0	32.5	16.5
2	30	26.5	29.5	23.0
3	27	34.5	34.5	28.0
4	25	48.0	47.0	37.0
5	26	40.0	37.0	25.0
6	28	40.0	38.5	22.5
8	28	30.0	26.0	17.0
11	26	33.5	32.0	25.0
12	23	40.5	37.5	29.5
13	24	41.5	37.5	33.0
14	26	38.0	36.5	37.0
19	25	50.5	46.0	37.5
23	24	37.5	32.0	26.0
25	25	29.5	28.0	24.0
29	24	36.5	35.0	21.5
30	26	43.0	44.5	34.0
31	25	41.0	37.0	27.5
32	26	46.0	32.0	28.0
33	28	34.0	35.0	24.5
35	24	38.5	34.0	22.0
37	24	46.5	37.5	27.0
38	23	38.0	35.0	26.5
39	24	44.0	35.0	22.0
40	29	42.0	34.5	27.0
44	27	32.0	29.0	24.0
46	30	44.5	37.5	32.5
47	27	(?)	31.0	23.0
48	30	38.5	37.5	18.0
49	29	40.0	36.5	24.0
Average		*38.9*	*35.6*	*26.3*
Minimum		26.5	26.0	16.5
Maximum		50.5	47.0	37.5
Age: 30 to 40 years				
7	33	38.0	30.0	24.0
9	40	46.5	39.5	18.0
15	35	45.0	45.0	34.0
16	35	40.5	38.0	32.0
18	40	29.5	32.0	15.0
21	32	47.0	43.0	28.0
26	38	36.0	42.5	25.0
27	40	28.0	26.5	12.5
36	38	43.5	34.0	23.0
41	35	45.0	37.0	27.0
45	40	48.0	38.0	32.0
Average		*40.6*	*36.9*	*24.6*
Minimum		28.0	26.5	12.5
Maximum		48.0	48.0	34.0
Age: 40 to 50 years				
17	50	37.5	32.0	23.0
20	45	38.0	33.5	18.0
22	48	32.0	27.5	32.5
24	46	41.0	31.0	16.0
28	45	39.5	42.0	26.0
34	45	42.5	31.0	24.0
42	50	32.0	25.0	25.0
50	50	31.0	28.0	20.0
Average		*36.7*	*31.3*	*23.1*
Minimum		31.0	25.0	16.0
Maximum		41.0	42.0	32.5
Age: 50 to 60 years				
10	55	39.0	33.5	23.0

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*h*) **PAPAGO**—Continued

FEMALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
51	22	20.0	21.0	10.0
52	26	27.5	20.5	13.5
54	30	28.0	20.0	16.0
58	26	28.0	22.0	16.0
59	25	21.5	21.5	10.0
61	23	22.5	22.0	11.5
64	25	20.5	20.0	7.0
66	25	25.5	21.5	13.0
68	24	23.0	18.0	12.0
69	25	27.0	22.0	16.0
77	30	17.5	16.0	9.5
Average		*23.7*	*20.4*	*12.2*
Minimum		17.5	16.0	7.0
Maximum		28.0	22.0	16.0
Age: 30 to 40 years				
55	35	20.0	18.0	8.0
56	33	19.0	18.5	8.0
62	40	23.5	20.0	12.0
63	32	18.0	11.5	7.0
67	38	27.5	23.5	12.0
72	40	26.0	23.5	11.0
73	35	18.0	15.0	3.5
74	40	24.5	20.5	13.5
Age: 30 to 40 years—Continued				
75	35	27.0	25.0	17.0
76	35	30.0	26.0	13.0
79	40	21.0	18.0	5.5
80	35	28.0	21.5	24.0
Average		*23.5*	*20.1*	*11.2*
Minimum		18.0	11.5	3.5
Maximum		30.0	26.0	24.0
Age: 40 to 50 years				
53	45	(?)	22.0	(?)
57	50	23.0	16.0	12.0
60	45	11.0	13.0	7.0
78	45	21.5	20.0	7.0
Average		*18.5*	*17.8*	*8.7*
Minimum		11.0	13.0	7.0
Maximum		23.0	22.0	12.0
Age: 50 to 60 years				
65	55	24.0	19.0	14.0
71	55	13.0	10.0	3.0
Average		18.5	14.5	8.5

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*i*) PIMA

MALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
1	24	41.5	35.0	18.0
3	30	42.5	36.0	27.0
5	23	45.0	41.5	33.0
14	29	38.5	33.0	24.0
23	25	45.0	38.0	28.0
24	30	41.0	34.0	26.5
31	23	43.5	36.0	25.0
35	28	41.0	31.5	20.0
37	29	46.0	46.0	33.0
42	26	40.0	37.5	17.0
47	29	36.0	29.0	17.0
50	29	48.5	44.5	32.0
82	29	34.0	32.5	20.5
Average		*41.7*	*36.5*	*24.7*
Minimum		34.0	29.0	17.0
Maximum		48.5	46.0	33.0
Age: 30 to 40 years				
2	31	48.5	38.5	25.5
4	35	45.5	40.5	27.0
8	40	29.5	29.5	15.0
13	39	34.0	32.0	25.5
20	40	45.0	38.5	25.5
21	40	42.0	34.0	18.0
22	32	41.0	28.5	22.0
25	33	48.5	47.0	32.0
27	38	32.5	28.5	(?)
34	35	32.5	28.5	21.0
36	33	46.0	39.5	30.5
41	40	37.5	32.0	21.0
43	32	44.0	38.0	22.0
44	34	43.5	38.5	23.0
Average		*40.7*	*35.0*	*23.7*
Minimum		29.5	28.5	15.0
Maximum		48.5	47.0	32.0

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 40 to 50 years				
7	50	30.0	31.0	11.5
17	45	35.0	30.0	26.0
19	50	35.0	29.0	15.0
26	45	41.0	33.5	25.0
32	45	40.5	34.5	23.0
39	45	31.0	28.0	18.0
40	45	30.5	29.0	20.0
45	45	39.0	36.0	23.5
46	45	38.5	36.0	30.0
49	48	38.0	35.0	22.0
81	45	43.0	38.0	27.0
83	50	34.5	31.5	21.0
Average		*36.3*	*32.6*	*21.8*
Minimum		30.0	28.0	11.5
Maximum		43.0	38.0	30.0
Age: 50 to 60 years				
6	55	34.0	29.5	25.0
9	55	31.0	27.0	27.0
10	60	34.5	28.5	19.0
11	60	22.5	21.0	13.5
14	60	38.5	33.0	24.0
15	55	43.0	36.5	22.5
16	60	19.5	18.5	7.0
18	60	19.0	16.0	(?)
28	60	27.5	23.0	14.5
29	60	29.0	22.5	14.5
30	55	27.5	27.0	15.0
48	55	18.0	17.0	5.5
Average		*28.7*	*24.9*	*17.0*
Minimum		18.0	16.0	5.5
Maximum		43.0	36.5	27.0

III. INDIAN ADULTS—Continued

TABLE 7.—*Tests of muscular strength, in kilos*—Continued

(*i*) **PIMA**—Continued

FEMALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
54	27	20.5	16.0	8.0
67	28	26.0	21.5	10.5
68	23	29.0	19.0	14.0
73	29	21.0	19.5	10.0
77	25	27.0	24.5	12.5
78	30	23.0	22.5	12.0
79	28	19.0	15.0	8.0
Average		*23.6*	*19.7*	*10.7*
Minimum		19.0	15.0	8.0
Maximum		29.0	24.5	14.0
Age: 30 to 40 years				
57	40	23.5	21.5	10.0
58	40	22.0	21.5	7.0
59	40	18.5	19.5	12.5
60	35	20.5	22.0	11.0
62	40	16.5	18.5	15.5
65	40	19.0	16.0	5.0
71	35	20.5	19.5	7.0
72	40	23.0	16.5	11.5
75	35	21.5	19.5	9.0
76	33	25.5	23.0	21.0
Average		*21.1*	*19.8*	*10.9*
Minimum		16.5	16.0	5.0
Maximum		25.5	23.0	21.0
Age: 40 to 50 years				
51	50	16.0	18.0	7.0
56	50	25.0	21.5	10.0
63	50	15.5	15.0	8.0
66	50	15.0	15.5	6.0
69	50	26.0	21.5	8.0
74	45	20.5	17.0	9.0
Average		*19.7*	*18.1*	*8.0*
Minimum		15.0	15.0	6.0
Maximum		26.0	21.5	10.0
Age: 50 to 60 years				
52	55	13.0	17.0	5.0
53	55	20.0	13.5	2.0
55	55	15.5	11.5	5.0
64	55	20.0	17.5	5.0
80	55	17.0	15.0	11.5
Average		*17.1*	*14.9*	*5.7*
Minimum		13.0	11.5	2.0
Maximum		20.0	17.5	11.5

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*j*) **CORA**

MALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
2	28	38.0	32.0	20.0
3	26	35.5	31.0	20.0
6	30	38.0	32.5	20.5
8	27	41.0	33.5	26.0
18	25	40.0	38.0	27.5
19	24	40.0	36.0	21.0
23	22	31.5	28.5	18.5
24	24	28.5	22.0	13.0
26	24	32.0	27.5	15.0
28	25	30.5	27.5	32.0
29	22	33.0	29.5	22.5
31	22	29.0	28.5	18.0
41	23	32.5	31.5	15.0
43	24	36.0	36.0	25.5
47	24	35.0	26.5	20.5
50	23	41.0	34.0	24.0
Average		*35.1*	*30.9*	*21.2*
Minimum		28.5	22.9	13.0
Maximum		41.0	38.0	32.0
Age: 30 to 40 years				
4	33	36.0	27.5	19.0
9	40	26.5	21.0	11.0
14	38	36.0	33.0	26.5
16	36	41.0	38.5	25.0
27a	34	31.0	29.5	21.0
32	35	(?)	25.0	16.0
33	35	32.5	33.0	27.0
40	32	38.5	29.0	22.5
48	35	27.5	24.5	12.5
Average		*33.6*	*29.0*	*20.1*
Minimum		26.5	21.0	11.0
Maximum		41.0	38.5	27.0
Age: 40 to 50 years				
1	45	32.5	29.0	20.0
5	50	34.5	28.0	15.5
11	50	31.0	20.5	23.5
15	50	30.0	29.5	19.5
17	48	24.5	24.5	16.0
20	50	34.0	24.5	21.0
21	50	34.5	32.5	25.0
25	45	36.0	32.0	19.5
30	45	29.0	20.5	12.0
36	50	30.0	30.0	18.5
37	48	34.0	31.0	22.0
38	48	33.0	21.0	18.0
39	50	27.5	28.0	13.0
42	50	36.0	28.5	19.5
45	50	31.0	26.0	17.0
46	50	30.0	21.0	(?)
49	45	29.5	23.0	12.5
Average		*31.6*	*26.4*	*18.3*
Minimum		24.5	20.5	12.0
Maximum		36.0	32.5	25.0
Age: 50 to 60 years				
7	55	30.0	20.0	14.0
10	60	24.5	12.5	15.5
12	55	34.5	27.0	17.0
22	60	29.5	23.5	12.0
27	54	35.0	28.5	23.0
34	60	30.0	25.5	15.0
35	65	29.0	26.0	13.0
44	55	31.0	24.0	12.5
Average		*30.4*	*23.4*	*15.3*
Minimum		24.5	12.5	12.0
Maximum		35.0	28.5	23.0

III. Indian Adults—Continued

Table 7. *Tests of muscular strength, in kilos*—Continued

(*j*) **CORA**—Continued

FEMALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
a	30	20.5	19.5	15.0
b	20	27.0	26.5	18.0
c	25	21.5	22.0	9.0
g	28	19.5	17.5	8.0
Average	......	*22.1*	*21.4*	*12.5*
Minimum	......	19.5	17.5	8.0
Maximum	......	27.0	26.5	18.0
Age: 30 to 40 years				
h	35	19.0	18.0	6.0
i	32	24.5	22.5	4.5
Age: 30 to 40 years—Continued				
j	40	19.5	15.5	10.5
Average	......	*21.0*	*18.7*	*7.0*
Minimum	......	19.0	15.5	4.5
Maximum	......	24.5	22.5	10.5
Age: 40 to 50 years				
d	50	18.5	15.0	7.5
e	45	29.0	33.0	15.5
f	45	21.0	20.5	11.5
Average	......	*22.8*	*22.8*	*11.5*
Minimum	......	18.5	15.0	7.5
Maximum	......	29.0	33.0	15.5

(*k*) **TARASCO**

MALE

Age: 20 to 30 years				
7	30	32.0	21.0	15.0
10	25	29.0	26.5	15.5
11	23	31.5	29.0	13.0
14	24	32.5	32.5	33.0
19	27	40.5	33.0	25.5
20	24	33.0	29.0	23.0
24	27	32.5	29.5	26.0
25	30	39.5	36.5	26.0
26	24	37.0	28.0	17.5
29	26	38.0	27.5	5.0
30	23	35.0	32.5	17.5
31	22	38.0	30.5	25.5
32	24	33.0	30.0	25.0
33	24	44.5	43.5	28.0
34	26	(?)	32.0	16.0
Age: 20 to 30 years—Continued				
35	23	33.0	29.5	19.5
36	24	30.0	30.5	20.0
37	26	31.5	27.0	16.0
38	24	34.5	28.0	20.5
39	25	42.5	35.5	21.5
41	26	39.5	30.5	17.5
42	27	40.5	40.5	23.5
43	28	37.5	27.5	20.0
44	23	32.0	29.0	14.5
48	25	34.5	28.0	10.0
49	30	41.0	40.0	31.5
Average	......	*35.7*	*31.0*	*20.2*
Minimum	......	29.0	21.0	5.0
Maximum	......	44.5	43.5	33.0

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*k*) **TARASCO**—Continued

MALE—Continued

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 30 to 40 years				
9	40	32.5	25.5	20.0
12	40	29.0	27.0	7.0
22	37	24.0	23.0	12.0
40	33	31.0	32.5	17.0
45	32	35.5	23.0	22.0
46	33	40.5	35.5	23.0
47	38	36.5	33.5	32.0
50	34	31.5	28.0	17.5
Average		*32.6*	*28.5*	*18.8*
Minimum		24.0	23.0	7.0
Maximum		40.5	35.5	32.0
Age: 40 to 50 years				
3	45	34.0	28.0	15.5
4	50	34.5	31.0	18.0
5	50	33.0	32.0	23.0
8	46	32.5	24.5	19.5
13	50	27.0	29.0	13.5
Age: 40 to 50 years—Continued				
21	50	30.0	24.5	12.0
23	50	31.0	30.0	14.0
28	50	24.0	29.5	18.0
Average		*32.0*	*28.6*	*16.7*
Minimum		27.0	24.5	12.0
Maximum		34.5	32.0	23.0
Age: 50 to 60 years				
6	55	38.0	29.0	22.0
15	65	24.0	18.0	19.0
16	60	22.5	17.0	12.5
17	58	32.5	24.5	14.5
18	60	20.5	18.0	4.0
Average		*27.5*	*21.3*	*14.4*
Minimum		20.5	17.0	4.0
Maximum		38.0	29.0	22.0

FEMALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
f	28	19.5	19.5	12.0
h	30	25.0	21.5	7.5
i	25	16.5	11.5	3.0
l	28	20.0	13.5	2.0
q	26	21.0	19.5	6.0
v	30	28.0	19.0	5.0
Age: 20 to 30 years—Continued				
z	26	24.0	23.0	7.5
γ	28	14.5	10.5	1.5
Average		*21.1*	*17.3*	*5.6*
Minimum		14.5	10.5	1.5
Maximum		28.0	23.0	12.0

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*k*) **TARASCO**—Continued

FEMALE—Continued

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 30 to 40 years				
a	35	15.5	14.0	3.0
d	32	25.0	17.5	12.5
e	35	14.5	15.0	2.5
n	38	22.0	19.0	9.0
r	32	22.0	20.0	9.5
s	35	22.5	16.0	7.0
t	32	24.5	20.0	12.0
y	35	25.0	24.5	6.5
β	38	22.5	16.0	10.0
δ	40	15.5	11.5	7.0
Average	......	*20.9*	*17.4*	*7.9*
Minimum	......	14.5	11.5	2.5
Maximum	......	25.0	24.5	12.5
Age: 40 to 50 years				
b	50	14.5	9.5	2.0
c	50	16.0	11.5	3.0
j	50	22.5	16.5	2.0
k	45	17.0	15.5	4.0

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 40 to 50 years—Continued				
o	45	20.5	17.0	4.0
μ	45	27.0	19.5	5.5
α	50	13.5	11.0	2.0
Average	......	*18.7*	*14.4*	*3.2*
Minimum	......	13.5	9.5	2.0
Maximum	......	27.0	19.5	5.5
Age: 50 to 60 years				
g	60	11.0	7.5	1.5
m	55	18.0	13.5	4.5
p	60	14.5	13.0	2.0
w	60	18.5	14.5	5.5
χ	55	14.0	13.5	4.0
Average	......	*15.2*	*12.4*	*3.5*
Minimum	......	11.0	7.5	1.5
Maximum	......	18.5	14.5	5.5

(*l*) **OTOMI**

MALE

Record no.	Age.	Right hand.	Left hand.	Traction.
Age: 20 to 3 years				
3	23	39.0	33.0	20.0
4	22	33.5	29.0	19.0
19	26	32.0	32.0	22.0
32	22	26.0	24.0	11.5
33	26	36.0	32.0	23.0
34	23	35.0	30.5	18.0
35	24	26.0	24.5	16.0

Record no.	Age.	Right hand.	Left hand.	Traction.
Age: 20 to 30 years—Continued				
39	24	34.0	27.5	18.0
40	28	33.0	30.0	17.5
43	25	32.0	29.5	20.0
Average	......	*32.7*	*29.2*	*18.5*
Minimum	......	26.0	24.0	11.5
Maximum	......	39.0	33.0	23.0

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*l*) **OTOMI**—Continued

MALE—Continued

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 30 to 40 years				
13	38	30.0	24.5	14.5
25	40	39.0	30.0	24.5
29	33	32.0	29.5	18.0
30	34	34.5	34.0	24.0
49	35	35.0	34.0	21.5
50	38	38.0	30.5	27.0
Average		*34.8*	*30.4*	*21.6*
Minimum		30.0	24.5	14.5
Maximum		39.0	34.0	27.0
Age: 40 to 50 years				
5	50	(?)	22.0	(?)
6	45	29.0	31.0	20.0
10	50	29.5	28.5	14.0
16	50	31.5	31.0	21.0
20	50	31.0	27.5	15.0
21	41	30.0	30.0	16.5
22	45	29.0	26.0	15.0
27	48	26.0	21.0	11.0
36	50	24.5	26.0	22.0
38	50	19.0	17.0	11.5
41	42	26.0	23.0	10.5
45	48	31.0	27.5	13.5
46	45	28.0	30.0	15.5
48	50	26.0	19.0	7.5
Average		*27.7*	*25.7*	*14.8*
Minimum		19.0	17.0	7.5
Maximum		31.5	31.0	22.0
Age: 50 to 60 years				
1	60	30.5	24.0	(?)
2	60	28.5	34.0	21.0
7	60	31.5	26.5	11.0
8	59	19.0	23.0	12.0
11	55	28.0	(?)	(?)
14	58	33.0	29.0	15.5
15	60	16.5	15.0	5.0
18	60	25.0	23.5	10.5
23	60	21.0	20.0	5.0
24	60	19.0	22.0	8.5
26	56	28.5	21.5	18.0
28	60	26.0	19.0	7.0
31	58	26.0	28.0	14.0
37	52	28.0	22.5	7.0
42	55	34.5	30.0	15.5
44	60	24.0	21.0	10.0
47	55	25.5	20.0	9.0
Average		*26.1*	*23.7*	*11.3*
Minimum		16.5	15.0	5.0
Maximum		34.5	34.0	21.0

FEMALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
f	25	13.0	12.5	5.0
g	30	24.5	21.0	12.0
p	25	19.0	16.5	8.0
q	26	24.0	24.0	10.0
u	30	25.0	18.0	11.0
v	25	23.0	20.5	13.0
Average		*21.4*	*18.8*	*9.8*
Minimum		13.0	12.5	5.0
Maximum		25.0	24.0	13.0

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*l*) **OTOMI**—Continued

FEMALE—Continued

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 30 to 40 years				
a	35	14.5	13.5	13.0
j	40	11.0	8.0	2.0
o	35	20.5	18.5	5.5
s	35	23.5	21.5	8.0
Average		*17.4*	*15.4*	*7.1*
Minimum		11.0	8.0	2.0
Maximum		23.5	21.5	13.0
Age: 40 to 50 years				
c	50	20.0	18.5	3.5
e	45	14.5	13.0	4.0
h	50	17.0	12.0	5.5
i	45	18.0	16.0	10.0
l	50	15.5	9.5	5.0
m	45	14.0	17.0	5.0
t	45	24.5	22.0	11.0
w	45	21.0	16.5	2.5
x	50	17.0	13.5	7.0
y	45	15.0	13.5	7.0
Average		*17.7*	*15.2*	*6.1*
Minimum		14.0	9.5	2.5
Maximum		24.5	22.0	11.0
Age: 50 to 60 years				
r	55	16.5	12.5	3.5

(*m*) **AZTEC**

MALE

Age: 20 to 30 years				
3	24	27.0	24.0	13.0
5	26	27.5	24.0	26.5
7	29	(?)	33.0	22.5
8	28	29.5	29.5	20.0
13	28	29.0	28.0	20.0
14	30	34.5	32.0	22.0
17	28	35.0	32.0	26.0
18	29	29.5	24.5	19.5
21	29	(?)	26.0	20.0
25	30	32.0	25.0	18.0
28	24	36.5	31.0	26.0
32	29	30.5	29.5	16.0
33	29	26.0	23.5	20.5
34	30	27.5	18.5	12.0
35	28	35.5	33.5	27.0
36	22	28.0	26.5	29.5
37	26	30.0	30.5	20.5
38	28	36.0	30.5	21.0
39	20	30.5	24.5	12.0
53	25	37.5	27.5	21.0
Average		*31.2*	*27.7*	*20.7*
Minimum		26.0	18.5	12.0
Maximum		37.5	33.5	29.5

III. INDIAN ADULTS—Continued

TABLE 7. *Tests of muscular strength, in kilos*—Continued

(*m*) **AZTEC**—Continued

MALE—Continued

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 30 to 40 years				
1	40	24.5	29.5	10.0
4	35	24.5	13.5	4.5
9	38	25.0	23.5	14.5
12	40	32.5	22.5	(?)
15	35	30.5	28.0	18.0
16	35	35.0	30.0	22.5
19	36	30.0	25.0	13.0
22	40	30.0	22.0	11.0
23	40	23.5	25.5	19.5
24	40	27.5	26.5	15.5
41	35	17.0	18.0	10.0
42	38	24.0	22.0	7.0
43	32	25.5	21.5	10.0
46	35	25.5	23.0	12.0
48	40	21.5	23.0	9.5
50	38	29.5	25.5	19.0
51	35	29.0	27.5	29.0
Average		*26.8*	*23.9*	*14.1*
Minimum		17.0	13.5	4.5
Maximum		35.0	30.0	29.0

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 40 to 50 years				
10	50	20.5	20.0	12.0
20	45	34.0	31.5	23.0
26	45	20.5	23.0	17.5
27	45	25.0	19.0	12.0
30	50	24.0	16.5	7.5
45	45	38.5	35.5	12.5
49	45	32.0	21.0	13.0
52	50	26.5	23.5	13.0
Average		*27.6*	*23.8*	*13.8*
Minimum		20.5	16.5	7.5
Maximum		38.5	35.5	23.0
Age: 50 to 60 years				
11	55	22.5	21.0	7.5
29	55	27.5	26.0	13.0
31	55	23.0	21.5	12.0
Average		*24.3*	*22.8*	*10.8*
Minimum		22.5	21.0	7.5
Maximum		27.5	26.0	13.0

III. Indian Adults—Continued

Table 7. *Tests of muscular strength, in kilos*—Continued

(*m*) **AZTEC**—Continued

FEMALE

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 20 to 30 years				
a	23	13.5	13.5	2.0
b	30	23.5	18.0	7.5
c	30	20.0	18.5	13.0
g	29	16.0	18.5	5.5
i	25	12.5	9.5	2.0
o	26	17.5	16.0	5.5
q	28	20.0	16.0	5.5
r	27	19.0	16.5	4.0
t	29	18.0	18.0	2.0
u	30	16.5	14.0	2.0
y	28	15.0	14.0	2.0
Average		*17.4*	*15.7*	*4.6*
Minimum		12.5	9.5	2.0
Maximum		23.5	18.5	13.0
Age: 30 to 40 years				
d	40	19.0	16.0	3.0
e	40	19.0	16.5	4.0
f	33	13.5	8.5	2.0
k	32	10.0	8.5	2.0
x	35	12.5	10.5	2.0
z	40	15.0	14.0	7.5
zz	32	16.0	13.0	11.0
Average		*15.0*	*12.4*	*4.5*
Minimum		10.0	8.5	2.0
Maximum		19.0	16.5	11.0

Record no.	Age.	Pressure.		Traction.
		Right hand.	Left hand.	
Age: 40 to 50 years				
m	45	13.5	8.0	5.0
p	50	16.0	14.0	5.5
s	50	18.0	12.5	6.5
v	50	(?)	14.0	2.5
w	50	13.5	15.0	2.0
*	45	16.0	14.0	4.0
a	50	11.0	9.5	2.0
Average		*14.7*	*12.4*	*3.9*
Minimum		11.0	8.0	2.0
Maximum		18.0	15.0	6.5
Age: 50 to 60 years				
j	55	15.0	13.5	3.0
u	55	13.5	13.5	5.0
+	55	13.0	13.0	4.0
Average		*13.8*	*13.3*	*4.0*
Minimum		13.0	13.0	3.0
Maximum		15.0	13.5	5.0

III. INDIAN ADULTS—Continued

TABLE 8. *Data pertaining to grayness*

(*a*) **APACHE**

MALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
9..	24	39..	45	.....	....		40..	28	.....	....	.....	....	
14..	24	47..	45	.....	....		46..	28	.....	....	.....	....	
33..	24	36..	55	.....	....		49..	28	.....	....	.....	....	
48..	24	.....	....	.....	....		28..	29	.....	....	.....	....	
2..	25	.....	....	.....	....		6..	30	.....	....	.....	....	
3..	25	.....	....	.....	....		20..	30	.....	....	.....	....	
15..	25	.....	....	.....	....		32..	30	.....	....	.....	....	
17..	25	.....	....	.....	....		42..	30	.....	....	.....	....	
26..	25	.....	....	.....	....		27..	32	.....	....	.....	....	
8..	26	.....	....	.....	....		30..	35	.....	....	.....	....	
13..	26	.....	....	.....	....		35..	35	.....	....	.....	....	
22..	26	.....	....	.....	....		21..	40	.....	....	.....	....	
38..	26	.....	....	.....	....		23..	40	.....	....	.....	....	
43..	26	.....	....	.....	....		24..	40	.....	....	.....	....	
10..	27	.....	....	.....	....		1..	45	.....	....	.....	....	
29..	27	.....	....	.....	....		4..	45	.....	....	.....	....	
50..	27	.....	....	.....	....		5..	45	.....	....	.....	....	
7..	28	.....	....	.....	....		16..	45	.....	....	.....	....	
11..	28	.....	....	.....	....		37..	45	.....	....	.....	....	
12..	28	.....	....	.....	....		25..	50	.....	....	.....	....	
18..	28	.....	....	.....	....		41..	50	.....	....	.....	....	
19..	28	.....	....	.....	....		44..	50	.....	....	.....	....	
31..	28	.....	....	.....	....		45..	50	.....	....	.....	....	
34..	28	.....	....	.....	....								

FEMALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
59..	23	73..	45	70..	45	Moderate.	76..	28	.....	....	.....	....	
71..	23	74..	45	78..	45	do.	60..	30	.....	....	.....	....	
66..	24	75..	50	64..	60	Half gray.	52..	33	.....	....	.....	....	
69..	24	77..	60	62..	60	Moderate.	58..	35	.....	....	.....	....	
79..	24	.....	....	72..	65	About one-half gray.	54..	38	.....	....	.....	....	
							61..	38	.....	....	.....	....	
80..	25	.....	....	.....	....		51..	40	.....	....	.....	....	
53..	26	.....	....	.....	....		57..	40	.....	....	.....	....	
68..	26	.....	....	.....	....		63..	40	.....	....	.....	....	
56..	28	.....	....	.....	....		65..	40	.....	....	.....	....	
67..	28	.....	....	.....	....		55..	50	.....	....	.....	....	

[a] Individual record numbers.

III. INDIAN ADULTS—Continued

TABLE 8. *Data pertaining to grayness*—Continued

(*b*) PUEBLOS

MALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
4	23	3	45	11	55	About two-thirds gray.	47	32					
							83	32					
15	23	44	45	25	55	Moderate.	48	33					
1	24	38	48	40	55	do.	90	33					
7	24	32	50	87	60	About one-half gray.	6	35					
							13	35					
17	24	28	55	88	60	do.	33	35					
14	25	50	60	45	65	About one-fourth gray.	49	35					
							27	36					
29	25						24	37					
10	26						2	40					
35	26						16	40					
9	28						23	40					
26	28						31	40					
30	28						42	40					
36	28						84	40					
43	28						8	45					
85	28						81	45					
34	29						82	45					
41	29						5	50					
12	30						18	50					
21	30						22	50					
46	30						37	50					
86	30						89	50					
19	32						20	52					
39	32												

FEMALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
67	24	71	40	70	50	Moderately gray.	62	29					
73	24	56	45	54	55	do.	68	29					
80	24	69	45	72	60	About one-third gray.	79	29					
							52	30					
51	25	76	45				59	33					
61	26						64	35					
77	26						75	35					
57	27						78	38					
66	27						58	40					
74	27						60	45					
53	28						55	48					
65	28						63	50					

[a] Individual record numbers.

III. INDIAN ADULTS—Continued

TABLE 8. *Data pertaining to grayness*—Continued

(*c*) **ZUÑI**

MALE

No gray hair.		Few gray hairs.		Advancing grayness.			No. gray hair.		Few gray hairs.		Advancing grayness.		
No[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
28	23	21	40	13	45	Moderately gray.	30	30					
2	24	9	45	36	50	do.	42	30					
4	25	24	50	11	55	About one-third gray.	43	30					
							57	30					
8	25	29	50	1	55	Moderately gray.	26	32					
3	26	46	50	58	55	do.	55	32					
6	26	14	55	60	55	do.	16	33					
18	26	45	55	40	55	Many gray hairs.	23	33					
47	26	50	55	37	60	Moderately gray.	51	33					
49	26			32	65	About one-half gray.	5	35					
							12	35					
7	27						39	35					
15	27						44	35					
17	28						52	36					
25	28						20	38					
33	28						59	38					
48	28						10	40					
54	28						41	40					
56	28						27	45					
19	29						31	45					
35	29						34	45					
53	29						38	45					
22	30												

FEMALE

No gray hair.		Few gray hairs.		Advancing grayness.			No. gray hair.		Few gray hairs.		Advancing grayness.		
No[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
61	24	78	45	63	50	Moderately gray.	82	33	62	55			
87	24	64	50	88	50	do.	79	35	84	55			
89	27	71	50	69	55	About one-third gray.	80	35					
							66	40					
65	28	73	50	68	55	Moderately gray.	81	40					
77	28	76	50				70	45					
67	30	83	50				74	45					
85	32	86	50				75	45					
72	33	90	50										

[a] Individual record numbers.

III. INDIAN ADULTS—Continued

TABLE 8. *Data pertaining to grayness*—Continued

(*d*) **MOHAVE**

MALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degrees.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
35..	24	14..	40	32..	35	Moderately gray.	45..	28	.....	....	39..	50	Moderately gray.
42..	24	22..	40	20..	40	About one-fourth gray.	25..	29	.....	....	3...	54	About one-sixth gray.
9...	25	27..	45	21..	45	About one-sixth gray.	6...	32	.....	....	5...	55	About two-thirds yellowish gray.
34..	25	37..	45	28..	45	Somewhat yellowish gray.	29..	32	.....	....	10..	55	Moderately gray.
40..	25	12..	48	1...	47	Moderately gray.	26..	35	.....	....	13..	55	About two-thirds yellowish gray.
7...	26	.....	....	4...	50	do.	2...	37	.....	....	16..	55	About two-thirds gray.
18..	26	.....	....	11..	50	About one-sixth yellowish gray.	8...	38	.....	....	19..	55	About one-sixth yellowish gray.
30..	26	.....	....	17..	50	About one-fourth yellowish gray.	15..	45	.....	....	38..	55	Mostly yellowish.
43..	26	.....	....	24..	50	About one-third yellowish gray.					44..	55	About one-fourth gray.
36..	27	.....	....	31..	50	About one-third gray.					41..	60	Mostly yellowish gray.
23..	28	.....	....	33..	50	do.							

FEMALE

52..	24	53..	36	67..	45	Moderately yellow.	51..	35	.....	....	58..	58	About one-half yellowish gray.
74..	25	60..	36	71..	45	Moderately gray.	63..	35	.....	....	.....	....	
59..	26	54..	40	65..	50	About one-fourth gray.	73..	35	.....	....	.....	....	
61..	26	66..	40	68..	50	do.	56..	40	.....	....	.....	....	
55..	30	69..	45	75..	50	do.	70..	45	.....	....	.....	....	
57..	32	.....	....	64..	50	About one-third yellowish gray.	72..	50	.....	....	.....	....	
76..	33	.....	....	62..	50	Mostly yellowish gray.							

(*e*) **YUMA**

MALE

2...	24	4...	32	24..	50	About one-third gray.	27..	27	.....	....	.....	....
15..	25	26..	47	1...	50	Moderately gray.	11..	28	.....	....	.....	....
18..	25	8...	50	17..	50	do.	5...	29	.....	....	.....	....
19..	25	.....	....	29..	50	do.	16..	29	.....	....	.....	....
20..	25	.....	....	6...	53	About one-third gray.	25..	30	.....	....	.....	....
22..	25	.....	....	3...	55	About two-thirds gray.	13..	32	.....	....	.....	....
21..	26	.....	....	7...	55	do.	10..	33	.....	....	.....	....
14..	27	.....	....	9...	60	Mostly dirty gray.	28..	38	.....	....	.....	....
							12..	45	.....	....	.....	....
							23..	45	.....	....	.....	....

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[a] Individual record numbers.

III. INDIAN ADULTS—Continued

TABLE 8. *Data pertaining to grayness*—Continued

(*e*) **YUMA**—Continued

FEMALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
3a	24	.....	....	1a	40	Moderately gray.	4a	32	.....	....	.....	....	
2a	30	.....	....	5a	50	About one-fifth gray.							

(*f*) **MARICOPA**

MALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
15	25	10	35	5	40	About one-sixth yellowish gray.	9	30	37	45	2	55	Mostly yellowish gray.
35	25	30	38	13	40	Moderately gray.	31	30	4	50	6	60	About two-thirds yellowish gray.
39	26	40	38	27	45	About one-fifth gray.	3	32	.....	....	17	60	Mostly dirty gray.
29	28	19	40	18	50	About one-third dirty gray.	14	32	.....	....	28	60	do.
36	28	38	40	16	50	Moderately gray.	24	32	.....	....	.....	....	
23	29	25	45	8	53	do.	32	35	.....	....	.....	....	
34	29	26	45	11	55	About one-half yellowish gray.	1	38	.....	....	.....	....	
7	30	33	45	12	55	About two-thirds dirty gray.	20	40	.....	....	.....	....	
							21	40	.....	....	.....	....	
							22	40	.....	....	.....	....	

FEMALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
53	24	71	29	80	35	Somewhat yellowish gray.	75	30	.....	....	52	55	About two-thirds yellowish gray.
60	28	70	38	68	40	Moderately gray.	57	33	.....	....	77	55	Somewhat yellowish gray.
66	28	73	40	65	45	About one-third gray.	58	33	.....	....	.....	....	
79	28	.....	....	59	50	About one-sixth yellowish gray.	56	35	.....	....	.....	....	
72	29	.....	....	67	50	do.	69	35	.....	....	.....	....	
62	30	.....	....	64	50	About one-fifth yellowish gray.	76	35	.....	....	.....	....	
63	30	.....	....	54	50	About one-fourth yellowish gray.	78	35	.....	....	.....	....	
74	30	.....	....	61	55	About one-sixth yellowish gray.	51	40	.....	....	.....	....	
							55	40	.....	....	.....	....	

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[a] Individual record numbers.

III. INDIAN ADULTS—Continued

TABLE 8. *Data pertaining to grayness*—Continued

(*g*) **PIMA**

MALE

No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
5	23	24	30	27	38	Somewhat yellowish gray.
31	23	4	35	41	40	About one-sixth gray.
1	24	34	35	26	45	Moderately gray.
23	25	13	39	32	45	do.
42	26	20	40	83	50	About one-fifth gray.
35	28	21	40	7	50	About one-fifth yellowish gray.
14	29	39	45	19	50	do.
37	29	40	45	33	50	Moderately gray.
47	29	45	45	30	55	About one-sixth gray.
50	29	81	45	15	55	About one-third gray.
82	29	38	50	6	55	Over one-third yellowish gray.
3	30	.....	....	48	55	About one-half yellowish gray.
2	31	.....	....	9	55	About two-thirds yellowish gray.
22	32	.....	....	11	60	About one-half iron gray.
43	32	.....	....	16	60	About two-thirds gray.
25	33	.....	....	12	60	Yellowish gray.
36	33	.....	....	18	60	Mostly yellowish gray.
44	34	.....	....	28	60	All shades of yellowish gray.
8	40	.....	....	29	60	Mostly yellowish gray.
17	45	.....	....	10	65	Iron-grayish yellow.
46	45	.....	....	.....	....	
49	48	.....	....	.....	....	

FEMALE

No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
68	23	61	35	62	40	Somewhat yellowish gray.
77	25	75	35	74	45	About one-third yellowish gray.
54	27	58	40	51	50	do.
67	28	59	40	66	50	About two-thirds all shades yellowish gray.
79	28	65	40	56	50	Somewhat yellowish gray.
73	29	.....	....	63	50	Moderately gray.
78	30	.....	....	69	50	Somewhat yellowish gray.
76	33	.....	....	52	55	About one-fourth yellowish gray.
60	35	.....	....	80	55	About one-half yellowish gray.
71	35	.....	....	55	55	Yellowish gray.
57	40	.....	....	64	55	Mostly yellowish gray.
72	40	.....	....	53	55	Almost all yellowish gray.
70	45	.....	....	.....	....	

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[a] Individual record numbers.

III. INDIAN ADULTS—Continued

TABLE 8. *Data pertaining to grayness*—Continued

(*h*) PAPAGO

MALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
12..	23	23..	24	36..	38	Moderately gray.	3...	27	.....	....	.....	....	
38..	23	25..	25	28..	45	do.	44..	27	.....	....	.....	....	
13..	24	30..	26	24..	46	do.	47..	27	.....	....	.....	....	
29..	24	8...	28	43..	48	do.	6...	28	.....	....	.....	....	
35..	24	49..	29	50..	50	About one-half gray.	33..	28	.....	....	.....	....	
37..	24	46..	30	42..	50	Moderately gray.	40..	29	.....	....	.....	....	
39..	24	48..	30	10..	55	About one-half gray.	1...	30	.....	....	.....	....	
4...	25	41..	35	.....	....		2...	30	.....	....	.....	....	
19..	25	9...	40	.....	....		21..	32	.....	....	.....	....	
31..	25	45..	40	.....	....		7...	33	.....	....	.....	....	
5...	26	20..	45	.....	....		15..	35	.....	....	.....	....	
11..	26	34..	45	.....	....		16..	35	.....	....	.....	....	
14..	26	22..	48	.....	....		26..	38	.....	....	.....	....	
32..	26	17..	50	.....	....		18..	40	.....	....	.....	....	
							27..	40	.....	....	.....	....	

FEMALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
51..	22	55..	35	74..	40	Somewhat gray.	54..	30	.....	....	.....	....	
61..	23	67..	38	60..	45	About one-tenth gray.	77..	30	.....	....	.....	....	
68..	24	53..	45	65..	55	About one-third gray.	63..	32	.....	....	.....	....	
59..	25	57..	50	70..	55	About three-fourths gray.	56..	33	.....	....	.....	....	
64..	25	.....	....	71..	55	Somewhat gray.	73..	35	.....	....	.....	....	
66..	25	.....	....	.....	....		75..	35	.....	....	.....	....	
69..	25	.....	....	.....	....		76..	35	.....	....	.....	....	
52..	26	.....	....	.....	....		80..	35	.....	....	.....	....	
58..	26	.....	....	.....	....		62..	40	.....	....	.....	....	
							72..	40	.....	....	.....	....	
							79..	40	.....	....	.....	....	
							78..	45	.....	....	.....	....	

(*i*) YAQUI

MALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
19..	21	14..	30	.....	....		9...	27	.....	....	.....	....	
17..	23	.....	....	.....	....		15..	27	.....	....	.....	....	
10..	24	.....	....	.....	....		6...	28	.....	....	.....	....	
1...	26	.....	....	.....	....		13..	28	.....	....	.....	....	
2...	26	.....	....	.....	....		18..	28	.....	....	.....	....	
11..	26	.....	....	.....	....		3...	29	.....	....	.....	....	
16..	26	.....	....	.....	....		8...	29	.....	....	.....	....	
4...	27	.....	....	.....	....		7...	30	.....	....	.....	....	
5...	27	.....	....	.....	....		12..	32	.....	....	.....	....	

[a] Individual record numbers.

III. Indian Adults—Continued

Table 8. *Data pertaining to grayness*—Continued

(*j*) TARAHUMARE

MALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
3...	20	21..	51	5...	43	Moderately gray.	20..	28	.....	....	23..	65	Much gray hair.
14..	24	9...	60	11..	55	do.	13..	30	.....	....	.....	....	
10..	25	.....	....	17..	55	do.	12..	35	.....	....	.....	....	
18..	25	.....	....	2...	60	do.	15..	35	.....	....	.....	....	
4...	26	.....	....	8...	60	do.	1...	40	.....	....	.....	....	
7...	26	.....	....	6...	65	do.	16..	40	.....	....	.....	....	
22..	26	.....	....	19..	65	do.							

FEMALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
i...	17	.....	....	j...	65	Moderately gray.	b..	26	.....	....	.....	....	
h..	18	.....	....	a..	70	Many gray hairs.	c...	30	.....	....	.....	....	
d..	19	.....	....	.....	....		g...	30	.....	....	.....	....	
f...	19	.....	....	.....	....		e...	35	.....	....	.....	....	

(*k*) CORA

MALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
23..	22	8...	27	25..	45		4...	33	.....	....	.....	....	
29..	22	11..	50	20..	50		27 a	34	.....	....	.....	....	
31..	22	21..	50	45..	50		32..	35	.....	....	.....	....	
41..	23	30..	50	5...	50	Moderately gray.	33..	35	.....	....	.....	....	
50..	23	35..	65	27..	54		48..	35	.....	....	.....	....	
19..	24	.....	....	12..	55		16..	36	.....	....	.....	....	
24..	24	.....	....	7...	55	do.	14..	38	.....	....	.....	....	
26..	24	.....	....	44..	55	do.	9...	40	.....	....	.....	....	
43..	24	.....	....	10..	60	About three-fourths gray.	1...	45	.....	....	.....	....	
							30..	45	.....	....	.....	....	
47..	24	.....	....	22..	60	Moderately gray.	49..	45	.....	....	.....	....	
13..	25	.....	....	34..	60	Many gray hairs.	17..	48	.....	....	.....	....	
18..	25	.....	....	.....	....		37..	48	.....	....	.....	....	
28..	25	.....	....	.....	....		38..	48	.....	....	.....	....	
3...	26	.....	....	.....	....		15..	50	.....	....	.....	....	
2...	28	.....	....	.....	....		36..	50	.....	....	.....	....	
6...	30	.....	....	.....	....		42..	50	.....	....	.....	....	
40..	32	.....	....	.....	....		46..	50	.....	....	.....	....	

FEMALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
c...	25	b..	20	d..	50	About one-half gray.	h..	35	.....	....	.....	....	
							j...	40	.....	....	.....	....	
g..	28	.....	....	.....	....		e...	45	.....	....	.....	....	
a...	30	.....	....	.....	....		f...	45	.....	....	.....	....	
i...	32	.....	....	.....	....								

[a] Individual record numbers.

III. INDIAN ADULTS—Continued

TABLE 8. *Data pertaining to grayness*—Continued

(*l*) OTOMI

MALE

No gray hair.		Few gray hairs.		Advancing grayness.		
No[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
4	22	40	28	16	50	Moderately gray.
32	22	13	38	36	50	do.
3	23	6	45	37	52	About one-sixth gray.
34	23	27	48	11	55	About one-fourth gray.
35	24	5	50	47	55	About one-third gray.
39	24	10	50	42	55	About one-half gray.
43	25	20	50	26	56	Moderately gray.
19	26	38	50	31	58	About one-third gray.
33	26	48	50	15	60	About one-fifth gray.
29	33	12	55	17	60	About one-third gray.

No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
30	34	14	58	23	60	About one-third gray.
49	35	8	59	24	60	do.
50	38			28	60	About two-fifths gray.
25	40			2	60	About one-half gray.
21	41			1	60	About two-thirds gray.
41	42			7	60	do.
9	45			18	60	About three-fourths gray.
22	45			44	60	Moderately gray.
46	45					
45	48					

FEMALE

No gray hair.		Few gray hairs.		Advancing grayness.		
No[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
k	24	a	35	b	35	Moderately gray.
f	25	o	35	i	45	do.
p	25	j	40	n	45	do.
v	25	e	45	x	50	About one-third gray.
q	26	m	45	l	50	About two-thirds gray.

No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
g	30	w	45	c	50	Mostly gray.
u	30	h	50	r	55	About one-half gray.
s	35			d	60	Mostly gray.
t	45					
y	45					

(*m*) TARASCO

MALE

No gray hair.		Few gray hairs.		Advancing grayness.		
No[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
31	22	48	25	1	35	Moderately gray.
11	23	45	32	13	50	About one-sixth gray.
30	23	40	33	4	50	Moderately gray.
35	23	3	45	5	50	do.
44	23	28	50	21	50	do.
14	24	17	58	2	60	do.
20	24	16	60	6	60	do.
26	24			18	60	Mostly gray.
32	24			15	65	About one-fifth gray.
33	24			45	32	Exceptional.[b]
36	24					
38	24					
10	25					
39	25					
29	26					
34	26					

No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
37	26					
41	26					
19	27					
24	27					
42	27					
43	28					
7	30					
25	30					
49	30					
46	33					
50	34					
27	35					
22	37					
47	38					
9	40					
12	40					
8	46					
23	50					

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[a] Individual record numbers.

[b] A small tuft of grayish-yellow hair on left and in front.

III. INDIAN ADULTS—Continued

TABLE 8. *Data pertaining to grayness*—Continued

(*m*) **TARASCO**—Continued

FEMALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
i...	25	d...	32	j...	50	Somewhat gray.	v...	30	.....	....	.....	....	
q...	26	a...	35	α...	50	do.	r...	32	.....	....	.....	....	
z...	26	y...	35	x...	55	About two-thirds gray.	t...	32	.....	....	.....	....	
							ε...	35	.....	....	.....	....	
f...	28	n...	38	m...	55	Somewhat gray.	s...	35	.....	....	.....	....	
l...	28	k...	45	g...	60	About one-eighth gray.	β...	38	.....	....	.....	....	
							δ...	40	.....	....	.....	....	
γ...	28	c...	50	w...	60	Somewhat yellowish gray.	o...	45	.....	....	.....	....	
							u...	45	.....	....	.....	....	
h...	30	.....	....	p...	60	Mostly gray.	b...	50	.....	....	.....	....	

(*n*) **AZTEC**

MALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
39...	20	32...	29	12...	40	Somewhat gray.	34...	30	.....	....	.....	....	
36...	22	4...	35	2...	55	do.	40...	30	.....	....	.....	....	
3...	24	16...	35	11...	55	About one-third gray.	47...	30	.....	....	.....	....	
							54...	30	.....	....	.....	....	
28...	24	46...	35	29...	55	About one-half gray.	43...	32	.....	....	.....	....	
							6...	35	.....	....	.....	....	
53...	25	51...	35	31...	55	do.	15...	35	.....	....	.....	....	
5...	26	23...	40	.....	....		41...	35	.....	....	.....	....	
37...	26	24...	40	.....	....		19...	36	.....	....	.....	....	
8...	28	48...	40	.....	....		9...	38	.....	....	.....	....	
13...	28	20...	45	.....	....		42...	38	.....	....	.....	....	
17...	28	27...	45	.....	....		50...	38	.....	....	.....	....	
35...	28	52...	50	.....	....		1...	40	.....	....	.....	....	
38...	28	.....	....	.....	....		22...	40	.....	....	.....	....	
7...	29	.....	....	.....	....		44...	40	.....	....	.....	....	
18...	29	.....	....	.....	....		26...	45	.....	....	.....	....	
21...	29	.....	....	.....	....		45...	45	.....	....	.....	....	
33...	29	.....	....	.....	....		49...	45	.....	....	.....	....	
14...	30	.....	....	.....	....		10...	50	.....	....	.....	....	
25...	30	.....	....	.....	....		30...	50	.....	....	.....	....	

FEMALE

No gray hair.		Few gray hairs.		Advancing grayness.			No gray hair.		Few gray hairs.		Advancing grayness.		
No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.	No.[a]	Age	No.[a]	Age	No.[a]	Age	Degree.
a...	23	*...	45	l...	50	About one-third gray.	b...	30	.....	....	.....	....	
							c...	30	.....	....	.....	....	
i...	25	α...	50	p...	50	do.	u...	30	.....	....	.....	....	
σ...	26	.....	....	v...	50	About one-half gray.	k...	32	.....	....	.....	....	
							zz...	32	.....	....	.....	....	
r...	27	.....	....	s...	50	Somewhat gray.	f...	33	.....	....	.....	....	
q...	28	.....	....	w...	50	do.	h...	35	.....	....	.....	....	
y...	28	.....	....	j...	55	About one-fourth gray.	x...	35	.....	....	.....	....	
							d...	40	.....	....	.....	....	
g...	29	.....	....	+...	55	About two-thirds gray.	e...	40	.....	....	.....	....	
							z...	40	.....	....	.....	....	
t...	29	.....	....	n...	55	Somewhat gray.	m...	45	.....	....	.....	....	

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[a] Individual record numbers.

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